

## Should You Pay a Person? Or a Job?

By Brad Schultz  
CW New York Bureau

A sampling of DP managers disagreed last week about whether DP salaries should be negotiated on an individual rather than on a job description basis.

And the polled DP chiefs also disagreed about whether it is wise to award merit bonuses to DP professionals for work above and beyond the call of duty.

But nearly all 15 respondents to a *Computerworld* telephone survey said their

DP staffs were unlikely ever to unionize. Collective bargaining for salaries would clash with the typical DP professional's individualistic personality, several managers told CW.

Most added that DP unionization would reflect managerial weakness.

The survey respondents run the DP operations of six manufacturers, two financial institutions, two insurers, two travel companies, a retailer, a utility and

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# COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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## TI Makes DDP Bid With SNA for DS990

By Bruce Hoard  
CW Staff

DALLAS — Texas Instruments, Inc. last week joined the swelling ranks of supporters of IBM's Systems Network Architecture when it announced SNA support for its DS990 minicomputer systems.

Like Honeywell, Inc. [CW, July 20], the mini maker is trying to work its way into the distributed data processing (DDP) market now dominated by IBM.

TI's Distributed Network Communications System (DNCS) software is said to provide a convenient means of off-loading tasks from a host IBM mainframe onto TI terminals. The terminals can

be used for program development, local applications or as IBM 3270 terminals. Programs, commonly used screens and the data base can be stored on the DS990 mini, reducing communications to the host mainframe, the vendor said.

Operating under TI's general-purpose Distributed Network Operating System (Dnos), the software reportedly provides communications between a DS990 system and an IBM host computer by emulating an IBM 3274 or 3276 Physical Unit (PU) Type 2 cluster controller.

In addition, DNCS allows DS990 CRT terminals to em-

(Continued on Page 4)

## CCIA Charges Users 'Raped' By Decision Supporting Bell

By Bruce Hoard  
CW Staff

The user community is being "raped" by the legal process that culminated in the decision giving AT&T permission to enter the unregulated communications market, the president of the Computer & Communications Industry Association (CCIA) charged.

Moreover, Bell won that momentous victory over the stifled protests of users and competitors who were never given their lawful opportunity to contest the process, A.G.W. Biddle maintained.

Both Biddle and Herb Marks, legal counsel for the Independent Data Communications Manufacturers Association (IDCMA), were dismayed by the controversial decision handed down Sept. 4 by Judge Vincent P. Biunno of the U.S. District Court in New Jersey. Biunno ruled that the 1956 consent decree settling a previous antitrust case against

Bell does not prevent it and its subsidiaries from offering detariffed equipment in an unregulated market (story below).

Biddle and Marks vowed that the battle to keep Bell out of the unregulated or "enhanced" communications market will continue in the courts. The CCIA and IDCMA are among a group of industry organizations currently in a Washington, D.C., court of ap-

(Continued on Page 4)

## Judge Upholds FCC In Inquiry Decision

By Jake Kirchner

CW Washington Bureau

NEWARK, N.J. — The 1956 consent decree between AT&T and the government does not prohibit the company from offering unregulated equipment and services through a separate subsidiary, a federal judge here has ruled.

Judge Vincent P. Biunno's Sept. 4 ruling supported arguments by the Federal Communications Commission (FCC) that its recent Computer Inquiry II decision does not violate the consent agreement, which ended an earlier antitrust case against AT&T.

By the computer inquiry decision, issued last December, AT&T can offer intelligent terminal equipment, computer-based on-line services and other "enhanced services" if it does so through a fully separate subsidiary. AT&T asked Biunno, whose court has jurisdiction over the 1956 agreement, to clarify the consent decree so the company's offerings under the new FCC rules would not be challenged by federal antitrust officials.

(Continued on Page 4)

## ELECTRONICS UNDERWORLD

### High Tech Smugglers: 60% of Those Caught Try Again

By Christopher Simpson  
Special to CW

On Aug. 25, the U.S. Department of Commerce banned Richard Mueller and his company, Semitronic AG SA of Zug, Switzerland, from trading with U.S. companies until May 31, 2001. Mueller, it seems, had gotten caught exporting sophisticated computerized drafting systems to the USSR.

It was not the first time Mueller had been implicated in illegal high technology shipments to the Soviets. It may not be the last time, either. Documents on record show not one, but 10 different examples of people who have been caught making illegal high technology exports or trafficking in stolen microcomputer chips — and

*How can a manufacturer make sure it's not selling its products to a smuggler? See Page 81.*

who have come back to try their luck at the game a second time.

## Rand Slams Controls on Exports

By Bill Laberis  
CW Staff

SANTA MONICA, Calif. — Tightening export controls to stem the flow of American high technology to the Soviets may ultimately do our cause more harm than good.

Further, there is some evidence showing that the high technology imported by the Russians has not visibly im-

proved the Soviets' ability to innovate and improve their own industries — and in some cases has done just the opposite.

These are some of the findings in a recent report entitled "Selling the Russians the Rope? Soviet Technology Policy and U.S. Export Controls," prepared by the Rand Corp. here for the U.S. De-

partment of Defense. Despite a growing concern over the transfer of computer technology to the USSR, problems inherent in the Soviet economic system sharply undercut the value of imported or stolen American DP technology, according to the author of the report, Thane Gustafson. "After 15

Although the number of Department of Commerce in-

(Continued on Page 8)



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## Amex, NYSE Shut Down

# Blackout Causes Wall Street 'Crash'

By Bob Johnson

CW New York Bureau

**NEW YORK** — Wall Street computers and teleprocessing lines crashed here last week when a power blackout hit a large portion of the city's financial center.

The crash came at 3:25 p.m. Wednesday when an explosion and fire at a Consolidated Edison (Con Ed) power plant here cut electricity to data centers in lower Manhattan and forced uninterruptible power supplies (UPS) and backup generators to kick on.

The New York Stock Exchange (NYSE) and the American Stock Exchange (Amex) were forced to shut down operations early because of the power loss. Both exchanges are online to the Securities Industry Automation Corp. (Siac), jointly owned by the NYSE and Amex.

Lee Amaya, chairman and chief executive officer of Siac, said that the exchange reported a loss of power when it noticed that its CRTs went black. The Siac center, which is only a few blocks away from the exchanges, immediately switched to UPS power and continued sending signals to the exchanges, Amaya said.

"The exchange's tubes were black because they have no auxiliary power to keep them up. Our systems were still operating because of the UPS," he added.

### Equipment Lineup

Two Sperry Univac 1182s and two 1160s, an IBM 3033, an IBM 370/158 and Tandem Computers, Inc. equipment serve the exchanges. Once power was stabilized through the UPS the systems were routinely shut down and brought back up using six

diesel generators at the Siac center. "We went down orderly, the power reserves worked like a charm," Amaya said.

Bob Balme of the NYSE said that the exchange experienced no real problems with data loss nor did he anticipate any because of the blackout.

Computer installations around the affected area in lower Manhattan reported different effects from the blackout.

Hy Stern, assistant commissioner of operations at New York City's Computer Service Center, said the two hardest hit areas at his installation were the teleprocessing lines and operations personnel. "The computers stayed up thanks to our motor generators, but we are still doing triple checks on equipment and data to be sure," he said.

Sources at Morgan Guaranty and Trust Co., which has data centers throughout the blacked out area, said that because of fuel pump problems feeding the auxiliary generators, its main computer center was down for more than 15 hours. Although Con Ed restored power four hours after the explosion, the lack of generator assistance apparently caused difficulties in getting things back to normal.

The Federal Reserve Bank, which handles more than \$190 billion a day in securities and cash transactions, reported that most of the day's securities transfers had been completed before the blackout, but officials expressed some concern about check clearing processes.

## Judge Postpones Damages Phase Of Antitrust Case Against DG

**SAN FRANCISCO** — Judge William H. Orrick of the U.S. District Court here has postponed indefinitely the damages phase of the antitrust case brought against Data General Corp. by Fairchild Camera and Instrument Corp.

In June, a jury found DG guilty of violating antitrust laws by tying sales of its hardware to software. [CW, June 15].

In deciding to postpone the damages portion of the trial, Judge Or-

rick said he has been worried about the definition of the markets described by Fairchild — those computer systems compatible with DG's Nova system. "I find it impossible for me to decide most of the damage motions ... until I get the market questions settled," he said.

The judge has not placed any limit on the amount of time he will take to review the case.

DG has already filed for a judgment notwithstanding the verdict.

## This Week

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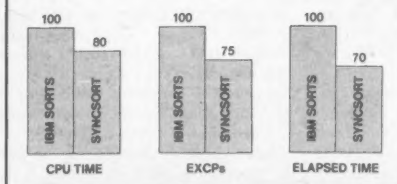
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## Chart of the Month:

### Performance Comparisons



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# CCIA: Users Being 'Raped' By Pro-Bell Ruling

(Continued from Page 1)

peals protesting their exclusion from litigation leading to last week's decision.

The communications industry will not be protected from monopolistic Bell practices by the provisions of the Federal Communications Commission's (FCC) Computer Inquiry II, the CCIA president said. Promulgated last December, that decision allows AT&T to begin marketing terminals and enhanced services, such as electronic mail and videotex, through separate subsidiaries.

However, Inquiry II does not address the basic problem of AT&T's incentives to favor those separate subsidiaries, Biddle claimed. "There are numerous ways in which AT&T can restrict the users' access to new technology or to the offerings of competitors as long as they can link a so-called competitive offering with a monopoly service," he declared.

Furthermore, it is "unreasonable" to expect Bell not to favor a company under its corporate umbrella, he said.

## Partial Victory?

Marks, the IDCMA's legal counsel, sees the Buinno decision as only a partial victory for AT&T because it is subject to appeal, an appeal that may be combined with the court of appeals case in Washington, D.C.

Bell competitors will not necessarily be protected from unfair monopolistic practices, even if the common carrier strictly adheres to the rules and regulations laid down by the FCC in Inquiry II, Marks asserted.

"I don't like the commission's rules," he said. "I don't think the rules themselves are adequate. I think Bell could probably comply with them because they are so limited that they don't really require much separation at all."

## Obstacles Faced by Bell

On a more sanguine note, John Gantz, director of publications at International Data Corp. in Framingham, Mass., examined Bell's entry into the communications market and came up with three major tasks.

According to Gantz, Bell must transfer assets to the newly created

fully separate subsidiary, develop a sales staff used to working in the competitive market and develop a marketing and engineering philosophy that fits the competitive market.

"Bell is trying to raise money to refurbish its plant and to prepare to transfer assets to a separate subsidiary," he observed. Bell has traditionally not depreciated its equipment as fast as its competitors because the FCC and state utilities have kept rates low and Bell profit margins

high by telling the firm to write off equipment over 40 years instead of 10.

However, that situation is already changing in a way that may cost communications users money. "Bell is already receiving depreciation rate reform from the FCC and they're going to be raising rates to cover the faster depreciation," Gantz predicted.

Along those lines, users have already been contributing to AT&T's "new economics of telecommunica-

tions" through increased rates for user-sensitive Wats, private-line and local services, he added.

What newly available areas is the communications giant likely to exploit first? "I think they'll sell hardware, basic switchboards and key systems" and, "if I were Bell, I'd get hot on voice mail," Gantz replied, referring to the kind of Custom Calling II store-and-forward answering services previously proposed by Bell, but prohibited by regulation.

## Judge Backs FCC Decision in Inquiry II

(Continued from Page 1)

The Justice Department countered that the FCC must rely on tariffs and not marketplace competition to meet its regulatory responsibilities under the 1934 Communications Act.

The department, which also feared that a ruling in AT&T's favor here would undermine the government's ongoing antitrust suit against Bell, said no decision on whether to appeal Buinno's ruling will be made for several weeks. However, a Justice Department attorney involved in the proceeding earlier indicated an appeal would be likely if Buinno ruled in AT&T's favor [CW, April 27].

In his ruling, Buinno said the FCC does not have to rely on any particular regulatory mechanism and said because any AT&T separate subsidiaries set up according to the computer inquiry decision would still be subject to FCC review, the arrangement would not violate the consent decree.

"The language of the judgment is clear and unambiguous," Buinno wrote of the consent decree in his 30-page decision, "and it seems to the court beyond dispute that AT&T, in complying with the FCC [computer inquiry] order, will be engaging in the business of furnishing communications services and facilities, the charges of which are subject to public regulation under the Communications Act of 1934, as amended."

The judge said the 1934 law "does not propose to instruct FCC on how to [regulate] or what the rules and regulations are to say . . ."

According to Buinno: "While tariffs . . . have long been used in public utility regulation, they are but one of the tools of public regulation. The [government's] argument is therefore one of semantics and is not supported by either the language or the obvious intent of the [consent] judgment. . . ."

"Most significant of all," he said, "is the fact that, as a judgement in a civil antitrust suit, none of the language can be regarded as in any way confining or limiting or restricting the mandate, authority or discretion of the FCC or the manner of its exercise."

## 'Narrow' Ruling

The judge termed his ruling "narrow" and said it did not constitute a modification of the consent decree. The Justice Department and opponents of the computer inquiry decision who filed amicus briefs in the proceeding, said the FCC computer inquiry decision exceeds the commission's authority and will be detrimental to competition in nonregulated markets.

Buinno, however, noted that "the decision of the FCC itself is on direct

review elsewhere," specifically the U.S. Court of Appeals for the District of Columbia. "In that review, no doubt, questions involving the statutory authority of the FCC to make the order as well as the factual and policy support for it, and other like questions, will be raised and decided."

Opponents of the Computer Inquiry decision, who fear it does not go far enough to keep AT&T from unfairly monopolizing unregulated communications and computer markets, have relied heavily on the contention the FCC ruling violated the 1956 consent decree.

But Buinno said the objections of those groups, such as the Computer and Communications Industry Association and the Independent Data Communications Manufacturers Association, "have no impact on the narrow questions here."

"Nor," he continued, "can the court express any view, even if it had one and authority to express it, on the question of whether the FCC's new regulatory format . . . is a good one or a bad one, or whether it will work better or not than some other format."

## TI Offers SNA Support for DS990

(Continued from Page 1)

ulate a 3278 display console, permitting users to interface DS990 application programs with SNA software, a spokesman said.

A PU Type 2 is the principal type of device used in SNA networks. It is a fully implemented SNA cluster controller node that contains support for application programs and devices such as CRT terminals and printers.

The firm is also providing emulation of IBM's 3271 Model 12 cluster control unit. Available with the DNOS 3270 interactive communications software, the option provides SNA PU Type 1 support to SNA customers.

DNOS requires a DS990 Model 4 or above with at least 512K bytes of memory, as well as a Four Channel Communications Controller (FCCC), a dedicated nonswitched line and a synchronous modem. The FCCC is a front-end communications processor that handles all the line protocol functions for DS990 systems.

DNOS is designed to handle up to eight FCCCs. Each FCCC can in turn handle up to four communications lines running at a maximum 19.2K bit/sec.

In response to the need for an application program to perform the functions of a terminal or operator

under SNA, TI introduced the DNCS programmed station control facility. This facility reportedly allows application programmers to write Cobol, Pascal or 990 assembly language programs that preprocess and validate input data before transmission to the host mainframe.

The alternative to programmed station control is to have the CRT terminal or printer on-line to the host.

How much pressure did TI users put on the vendor to offer SNA support? "I don't know if you'd call what we've had from users as being pressure," the spokesman said. "We've had considerable customer interest. The support of SNA has been for a considerable length of time our own strategy for addressing the distributed computing market."

A DNCS X.25 interface to the public packet-switched networks is being developed by TI's European operations and has already been released there, he said, adding that "It will be available in the U.S. in 1982."

A DNCS software license ranges in price from \$5,500 to \$7,100 depending on the media selected by the user. The software will be available in December from TI's Digital Systems Group, P.O. Box 202146, Dallas, Texas 75220.

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## Like Ethernet, But Less Expensive

# Datapoint, Tandy Build Local Net Architecture

By Brad Schultz

CW New York Bureau

NEW YORK — Datapoint Corp. and Tandy Corp. last week jointly announced a local network architecture said to be similar to but less expensive than Ethernet. Known as Arcnet, it is geared toward Datapoint products that wrap around Tandy's high-end Radio Shack Corp. TRS-80 microcomputers.

By clustering microcomputers together in a local network, Arcnet provides as many as 255 TRS-80 Model II users with a common data base that can be accessed equally between each station, according to a Radio Shack spokesman.

Arcnet also gives TRS-80 users unprecedented access to the extensive Attached Resource Computer (ARC) system from Datapoint, a leading supplier of data communications and distributed processing products.

Arcnet is not so much an enhancement of existing TRS-80 Model II users as an invitation for businesses in general to buy a microcomputer cluster bound to Datapoint hardware rather than a minicomputer from other vendors.

Although Ethernet installation costs are difficult to estimate, the networking system reportedly costs three to five times less to implement than that architecture, which is supported by Xerox Corp., Digital Equipment Corp. and other vendors.

### First Deliveries

First deliveries of Arcnet are scheduled for the second quarter 1982, the spokesman added.

For more than a year, a few systems houses have sold packages that cluster the high-end personal computers of Radio Shack's arch rival, Apple Computer, Inc., as a local networking alternative to time-shared minis [CW, Jan. 19].

A user can attach many processors to an ARC, dedicating each processor to certain applications while granting each processor access to a large volume of data. The net effect can be that applications software runs faster than it would if crammed through a single minicomputer costing as much as the entire assembly of microcomputers, a spokesman said.

Moreover, Arcnet allows software

to be diverted from unhealthy to healthy processors, so one unit's crash cannot halt operations, the spokesman noted. This hardware redundancy allows greater system reliability than processing through a single machine, he pointed out.

Also, Arcnet was said to allow an easier, more affordable processing growth path. With a single minicomputer, growth proceeds in large increments. Each new mini is a substantial investment that entails major reconfiguration and procedural adjustments. In contrast, a cluster of micros can be expanded in relatively small increments, the spokesman said.

A TRS-80 Arcnet can include Datapoint file processors, computers and peripherals, the spokesman stated. The user can add Datapoint's 137M-byte disk drive and 900 line/min printers to a TRS-80 II or add TRS-80 IIs to a Datapoint network as applications processors.

Further, bisynchronous communications software packages presently available with the TRS-80 II were said to permit links between an Arcnet configuration and mainframes produced by IBM, DEC and other manufacturers.

To implement Arcnet, Radio Shack would install a special interface card into the rear of the TRS-80 II. Each

card costs about \$400 and is built by Texas Peripherals, a joint venture of Datapoint and Tandy.

Other "necessary elements" include an RG-62 coaxial cable (about 30 feet of cable with connectors was said to cost \$30) and a junction box. A box for four processors will cost less than \$200, a spokesman maintained. A box for Arcnets with more processors will cost up to \$2,000, he added.

According to Tandy spokesmen, Arcnet will support future Radio Shack processors. The TRS-80 II features an 8-bit word length at a time when 16-bit micros, such as IBM's Personal Computer, have emerged [CW, Aug. 17].

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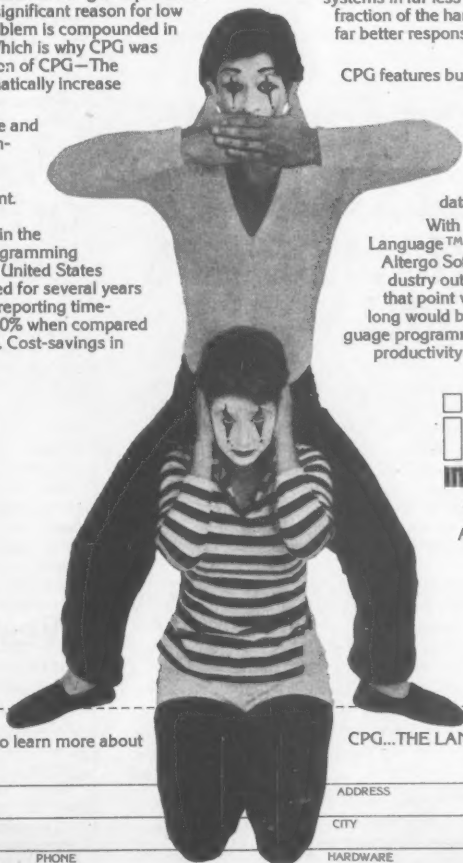
the areas of data-processing budgets, CPU and memory upgrades, education and support are equally impressive.

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## IBM Printer Fits 3270, 4341, 8100

WHITE PLAINS, N.Y. — IBM last week announced a bidirectional dot matrix printer that prints up to 340 char./sec and operates with the IBM 3270 CRT terminal, 4341 processor and 8100 Information System.

The pedestal-mounted Model 3268 offers variable paper widths and spacing formats. It provides a total of 22 character sets. Many national languages are represented and can be operator-selected. An APL/Text character set is available with each language.

The purchase price for the 3268 is \$7,500. Under a two-year lease, the monthly charge is \$290. The monthly rental charge is \$341.

## DP Salaries: Pay for People? Or for Jobs?

(Continued from Page 1)

a local government agency.

At Continental Life & Accident Co. in Boise, Idaho, DP salaries must be negotiated on an individual basis, according to DP Manager Christine Hurst. Another insurer's DP executive, Donald K. Eisan, said the same for Republic Insurance Co. in Dallas.

### Job Descriptions

There is more diversity in the skills and talents of programmers and systems analysts than in the job descriptions for which they might apply, CW was told. "There are no standard Cobol programmers anymore," explained Robert Best of Toyota Motor Sales USA, Inc. in Torrance, Calif. A seasoned Cobol has handled a wide range of applications in a number of systems milieus, Best pointed out.

It may be simple to write a DP job advertisement, he suggested, but those responding to the ad could have a wide range of backgrounds and still be qualified. If the DP manager is lucky, that is.

A scarcity of qualified DPers could force a manager to tailor job descriptions to strengths of available professionals.

But others in the poll said salaries were tied tightly to job descriptions, not individual backgrounds, at their organizations. New York law forbids

## Save Money on Programmers — Grow Your Own

By Brad Schultz

CW New York Bureau

Some companies save a lot of money on DP salaries by growing their own crop of DP personnel.

At Chittenden & Eastman Co., a Burlington, Iowa, manufacturer, the whole DP staff except for one person once held low-level clerical jobs in the firm.

As the need for DP personnel grew over the years, Chittenden & Eastman trained clerical workers for computer-related jobs. Secretaries became data entry workers, management information systems (MIS) director Joseph Wachter told *Computerworld*. And data entry workers became computer operators. And computer operators became programmers.

It took years, but the process allows the firm to avoid negotiating

salaries on an individual basis and to avoid grappling with the soaring salary growth rates common to various DP specialties. Instead, each newly created DP job represented a significant career advancement for a Chittenden & Eastman employee, Wachter explained.

### Low Pay

Employees who take advantage of this opportunity for company-subsidized advancement are made to feel that their success is the company's success, Wachter noted. Those who make it to DP roles are paid well under national averages, he pointed out, but their salaries represent significant improvement from when they held office jobs.

In Dallas, Republic Insurance Co.

also pays its DP staff well below national averages, according to DP Vice-President Donald K. Eisan. But the company's DPers are "home grown," he stated.

Wachter said he believes in awarding DPers bonuses for unexpectedly good performance. But Eisan said he does not. Both executives described their companies' management as "conservative."

Wachter maintained that the DP staff of Chittenden & Eastman would never unionize because the company's management "would make sure" a union could never offer a happier situation.

According to both Wachter and Eisan, programmers are psychologically ill-suited to organized bargaining. Programmers are accustomed to solving their own problems as individuals, they said.

Raymond L. Michael from negotiating DP salaries on an individual basis at the Kings County District Attorney's Office in Brooklyn.

### Civil Service

As chief of planning and systems, Michael may only fill jobs sanctioned by civil service administrators, at salary levels they dictate. Most of the local government agency's DP personnel must be hired on the basis of examination scores, Michael noted. In effect, his DP staff is completely unionized.

Requesting anonymity, the systems

manager for a large Ohio manufacturer said his company follows rigorous procedures for defining DP jobs and setting salary structures. Like most of the firms CW contacted last week, this company regularly studies several detailed salary surveys in deciding what to pay DPers.

The surveys track salary averages in a wide range of DP job categories, indicating what is normal in a user's vicinity and normal among similar organizations located elsewhere. Several DP managers expressed faith in the summaries of salary surveys routinely published by trade journals.

### Merit Bonuses

"I am against merit bonuses because I couldn't possibly measure what effort would be required to attain them," asserted the Ohio manufacturer's DP manager. Appropriate DP job descriptions and remuneration must result from meticulous analysis

of salary surveys and an organization's DP needs, he claimed.

Other executives described compromise approaches to the issue of rigid salary structures pegged to the job vs. flexible structures pegged to the individual. At Pittsburgh's Mellon Bank, enough DP job categories exist to match the diverse skills of systems personnel, Vice-President David Moore declared.

Several respondents described wide salary ranges for particular job categories. Salaries for one level of programmers at Upjohn Co. in Kalamazoo, Mich., vary by 50%, according to systems chief Robert Johnson.

At Mellon Bank, Moore strives to hire programmers and analysts at no more than the midpoint in prescribed salary ranges. Should an applicant request a starting salary near the maximum figure prescribed for a job, Moore will consider placing the individual in another, higher paying job category.

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## Brandon, Segelstein Die in Crash Of Private Plane in Wyoming

Dick H. Brandon, founder, president and chairman of Brandon Consulting Group, Inc., and Sidney Segelstein, a lawyer who specialized in DP contracting, perished in the crash of a private plane over the Labor Day weekend.

In addition to Brandon and Segelstein, three other people died in the accident, including Segelstein's two children.

Brandon, a well-known DP consultant, formed his New York City-based consulting group in 1979. Prior to that he was president of ACT/Brandon and earlier was chairman of the board of Brandon Applied Sys-

tems, Inc., a consulting and publishing group. Brandon was the author of nine books on DP-related topics.

Segelstein, a partner in the New York law firm of Goldstein, Segelstein, Schrank and Hays, specialized in DP contracts and computer negotiations for the past 10 years. He was the author of two books on computer contracting.

The two men joined their talents several times a year to teach courses on computer contracts that were offered through Brandon's company.

The reason for the crash has yet to be determined. The plane, piloted by Brandon, went down in Wyoming.

## Westar VI Construction Begins

UPPER SADDLE RIVER, N.J. — Construction of Western Union's sixth communications satellite, Westar VI, began recently at Hughes Aircraft Co. after the telegraph company received the green light from the Federal Communications Commission to proceed with construction and launch preparations.

The new satellite is scheduled to be sent aloft in the fourth quarter of

1983. It will have 24 transponders and will carry voice, video, facsimile and data traffic.

Western Union now uses three satellites. Westar IV and V, each with 24 transponders, are to be launched early next year. Westar VI will have more powerful transponders (transmitters) and will be equipped with spare traveling wave tube amplifiers to provide greater reliability.

# Consultant Offers Tips on Recruiting DP Pros

By Lois Paul  
CW Staff

ATLANTA — In order to improve their "batting average" in obtaining their fair share of that increasingly scarce commodity, the experienced DP professional, companies have to develop a systematic, in-house approach to recruiting.

This advice was offered by Walter P. Stroman, a management consultant with Peat, Marwick, Mitchell & Co. here. Citing figures such as a 30% turnover rate/year within the DP industry, Stroman addressed only a handful of the approximately 400 persons attending Management Science America, Inc.'s Interact user group, which met here last week.

One of his key points, possibly explaining the low attendance of the session, was that DP managers do not recognize that ongoing recruiting of personnel is a part of their job and should not be put aside.

He said the American Electronics Association recently decided at a board meeting to possibly offer bounties to colleges for providing qualified engineering graduates.

There are two mentalities, Stroman said. One is the "beleaguered hiring manager" who feels, "I've got one that is alive and has some experience. I will take him." The other is the enterprising DP professional who will move from company to company to gain experience and dollars, but who may not necessarily be best furthering his career goals.

What companies are doing in this marketplace is similar to a homeowner putting his own home on the market every three years and then buying it back from himself at a higher interest rate, he said.

Companies need to define the core skills they require and then develop an ongoing recruiting effort for those skills. "Finding good employees is like baking a cake — you can't rush it," Stroman added.

The DP manager also needs the complete understanding and backing of upper management in this process, as well as the support and input of subordinates.

## First Step

A major first step is the development and implementation of a training program to provide a continuous flow of DP professionals who will be trained and effective, he said, adding that many of these people can come from within other departments.

Once a personnel acquisition plan has been designed and agreed upon by all parties, it is necessary to begin building source lists and to sharpen interview skills.

Stroman suggested that user group meetings can be a good source of contacts. Other possible avenues are people who often speak before professional organizations; authors of articles on DP and referrals from staff members who could receive bounties or rewards for bringing in a new candidate.

Resumes that come in should be maintained and carefully filed according to qualifications, even if that person currently does not have the required skills, Stroman said. They may have them tomorrow or serve as a source of someone who does. Com-

panies should track the careers of those they interview but do not hire for this same reason, he added.

Stroman described the interview process as a sort of courtship procedure during which the company should attempt to separate itself from "the maddening crowd."

A first step is to remove as many hurdles as possible from the candidate's path. This might include arranging to meet him at the airport or prepaying his ticket.

The interview setting is important and the interviewer should eliminate telephone interruptions, postpone crises and alert other workers to avoid "drop-ins."

Stroman said it is critical to avoid snap decisions on hiring, noting that

he commonly takes 20 minutes to determine the person's best qualifications and then to examine his weaknesses to see if he is right for the job.

## CW at MSA

Control of the interview is important, Stroman said, describing the company's correct attitude as "let me see your hand first," determining the candidate's qualifications before describing the position.

He cautioned interviewers not to put words in candidates' mouths, but rather to probe deeply, ask open-ended questions and to verify assumptions during the discussion.

A company has to sell itself to candidates, making offers they cannot refuse, he said. To do this, the interviewer must glean what the candidate's "hot spots" are — that is, what he is looking for in a position, and then sell his company on that basis, he said.

In checking references, Stroman said the major purpose is to verify critical points and possibly gain additional insight. One negative reference should be treated as a red flag, but not as something that will kill a deal if all other indications are good.

The DP manager must convince upper management of the need for a realistic relocation and compensation policy that is competitive in today's marketplace, he stressed.

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# High Tech Smugglers Not Easily Discouraged

(Continued from Page 1)

vestigations (about 350 in 1980, up from 200 in 1979), equipment seizures and administrative actions have all about doubled in the past year, the number of violators has not increased substantially, according to William Skidmore of the Office of Export Administration (OEA). It is the "scope and magnitude" of the illegal export schemes that has increased, Skidmore said.

## Experienced Personnel

Reliable statistics are not available on people who traffic in stolen microcomputer chips, but the problem appears to be the same as in the area of high technology smuggling. For example, in the 1979 theft from Intel Corp. of 10,000 Model 2732 chips, in which a trail was traced to West Germany [CW, Sept. 7], at least two of the people allegedly involved had prior convictions for trading in stolen chips.

Consider the following cases:

- In 1972, Jacob Kelmer and DEK Electronics of Haifa, Israel, were barred from exporting U.S. goods after a state-of-the-art oscilloscope supposedly bound for Israel "disappeared" into Eastern Europe while being shipped through Vienna. The equipment in question was essential for testing military communications gear and nuclear weaponry.

But Kelmer was back in business by 1973. Using as an intermediary, a Canadian named Peter Virag, and a new corporate front, Kelmer arranged shipment of more than \$1.5 million worth of IC test equipment and a complete photorepeater system to Czechoslovakia.

Kelmer faces arrest if he returns to the U.S., but he has not been imprisoned or fined. Virag's Canadian company, DeVimy Test Labs, was fined only \$1,500.

- Bryan V. Williamson (also known as Bryon Williams) and his company, Datalec Ltd. of Dorset, England, were

hired by Kelmer to spend three weeks in training at the Massachusetts manufacturing plant of GCA Corp., a leading builder of photorepeater systems. Williamson, who was named by the Commerce Department as a "conspirator" in the Kelmer scheme, previously had been barred from trade with U.S. companies following an earlier diversion of oscilloscopes to Eastern Europe.

Even the freight forwarding company used in the scheme, Express Internationale Spedition of Vienna, had a history of illegal exports to the USSR dating back to at least 1959. It had been barred from trade with the U.S. for five years following a 1971 shipment of electronics test equipment to the Soviets.

Both Williamson and Express Internationale Spedition remain outside U.S. criminal jurisdiction. Williamson has been temporarily barred from trade with the U.S. while the investigation into Datalec continues, according to the Department of Commerce. Express Internationale Spedition continues to do business as usual.

- Richard Mueller, who was recently barred from U.S. trade following the alleged shipment of a computerized drafting system to the USSR, was also the man who exported semiconductor manufacturing equipment to the Soviets during the well-publicized II Industries smuggling case [CW, Feb. 9].

Mueller was forced to leave the U.S. in order to avoid arrest on criminal charges in the II Industries case. Even so, no sanctions were imposed against him until the end of August and he continued to trade with U.S. companies.

- Another alleged conspirator in the II Industries case, Volker Nast, was recently indicted on new charges of organizing a smuggling ring to ship a Micro Tel Corp. MSR 903 microwave surveillance system to Hungary. The equipment is a mu-

nitions list item with satellite communications functions sensitive enough that a company spokesman refused to discuss the matter for publication.

Although there have been arrests in the case, Nast himself remains safe as long as he does not return to the U.S. At present, he still is not barred from trade with U.S. companies.

## Tip of the Iceberg

It should be further noted that these repeat violators are merely the ones who have been caught; export control experts agree that those who have been prosecuted represent only the tip of the iceberg. No one knows how many slip through the net.

"A recurring problem . . . is that one or more of the principals in a scheme involving diversion of U.S.-origin commodities often is a foreign national," the OEA's Skidmore commented. "Therefore, unless that individual is arrested in the United States, we are often unable to complete a criminal prosecution of the [person] involved."

If a criminal violation is proved, the penalties can be substantial. Fines of up to \$100,000 along with jail sentences of up to 10 years are possible for each violation.

In practice, however, the most severe penalty ever imposed under the Export Control Act has been a six-month jail sentence and \$100,000 fine for Walter J. Spawr of Spawr Optical Research, who was convicted of exporting sophisticated laser mirrors to the USSR. That case is presently on appeal.

## Administrative Sanctions

When a criminal prosecution is not possible, the Department of Commerce can impose administrative sanctions against export control violators, OEA's Skidmore noted. These sanctions include barring an individual or company from exporting any goods that require a Special License

(as many computer-related products do) or totally banning an individual or company from doing business with U.S. companies. In the cases mentioned above, however, such sanctions — when they have been imposed at all — clearly have not been effective in preventing further technology smuggling.

Even when clear-cut sanctions are imposed, significant problems remain for companies that wish to avoid trade with known technology smugglers. Although the list of people and companies upon whom sanctions have been imposed is a public document — there are presently 105 entries on it — the very existence of this list is largely unknown outside of specialists in the field.

New names are added to the list from time to time, but apparently it has not been updated during the last decade to reflect new corporate or business fronts created by people already under sanction. Thus, individual manufacturers and exporters are left with the complicated — and expensive — task of determining for themselves whether a new corporate customer might be controlled by a person already under sanction.

## Communication Breakdowns

Breakdowns in communication among government agencies also create problems. Although the Department of Justice named Mueller and Nast in public documents as participants in the II Industries illegal export scheme, for example, the Department of Commerce did not impose sanctions against them, and their business continued.

More recently, the Department of Justice named two companies, ADT Analog und Digital Technik and Elmasch Vertriebsgesellschaft fur Produkte der Elektrotechnik und des Maschinenbaues MBH, as corporate fronts used for illegal exports by Werner Bruchhausen [CW, Aug. 31]. However, no sanctions have been brought against them by the Commerce Department, despite an order barring trade with Bruchhausen.

Moreover, investigators have turned up not two, but 19 more European companies linked to and in some cases created by Bruchhausen involved in export trade with the U.S. None of them are presently under sanction.

A source in the Department of Commerce pledged that the agency is conducting a "house cleaning." New time limits are being set for Department of Commerce actions, and other administrative measures have been taken to "clean up the backlog" of pending export control cases.

"We need more resources, both in trained manpower and money, for the strategic export control effort," said Assistant U.S. Attorney Theodore Wu, whose successful prosecution of the Spawr case marked a watershed in the government's export control effort. Wu argued that "legal reforms are not a stumbling block at this time" and that the criminal penalties possible under present law are an adequate deterrent.

Simpson is a freelance journalist based in Washington, D.C.



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# Rand Slams Controls Put On Exports to the USSR

(Continued from Page 1)

years of hard efforts, their [the Soviets'] lag behind the world leaders in computer technology has not closed," Gustafson wrote. "However, the Soviets' problems do not appear to be due primarily to Western export controls as such.

"Rather, the most serious obstacles come from within: poor working relations between Soviet producers and users, failure of the manufacturing ministries to treat a computer as a package... and the slowness of users to adapt to computer operations."

In addition, Gustafson warned, the Soviets are finding it increasingly easy to shop for high technology goods in other Western markets, notably France, West Germany and Japan. America's ability to prevent or limit such trade is marginal at best and attempts to do so could seriously strain ties with its allies while damaging its international trade position, he said.

As it is, the volume of U.S. high technology exports to the Soviets is small, relatively speaking. They totaled \$183 million in 1979, about 10% of the volume of high-technology goods the Russians imported from France, West Germany and Japan, Gustafson pointed out.

Besides, Gustafson warned, the Soviets have had little difficulty getting some needed American high technology by covert means. In fact, the release of the Rand report coincided with the recent smashing by U.S. Customs officials of a high technology smuggling ring stretching from California to Russia [CW, Aug. 31].

## Tightened Controls

The report's release also coincides with an anticipated tightening of export controls as mandated by the U.S. Export Administration Act of 1979. The Export Act was passed to control the export of entire classes of goods and "critical technologies" rather than controlling the outflow of individual items. The idea behind it and other export restrictions is to prevent the Soviets from gaining a leg up on the U.S. in the military sphere.

But the line between military and nonmilitary or civilian technology is unclear, becoming more blurred all the time, Gustafson argues. "Can a Sperry Univac 1100/10C computer sold to a Soviet design agency in the synthetic rubber industry be diverted to perform three-dimensional differential equations for aircraft wing stress analysis?" he asked.

"Amid the flurry of concern over whether it has been or might be, one should point out that synthetic rubber is of military importance, too, and that a good eight-year-old computer technology is likely to have a greater marginal impact in that industry than in the top-priority [military] facility, which presumably is already well provided for."

Despite the potential threat posed by seemingly innocuous civilian technology transfers, Gustafson found that high technology imports alone cannot help Russian long-range planning significantly unless the Soviets have highly developed

native capabilities in a particular area, such as computers. "The Soviets are failing to exploit the potential advantages of systematically combining Western high technology imports and domestic reforms in the management of innovation," Gustafson said. "In the lagging areas (such as computer science) in which most Soviet imports of foreign technology are concentrated, the Soviets' record on absorbing and learning from it is poor."

The reasons for this, he said, lie deep in the political and economic structure of the country and various Soviet reform measures over the last dozen years "have not altered them."

## Dollars for Scholars

By Tim Scannell  
CW Staff

DE KALB, Ill. — It was a simple case of scholars and dollars as some students here at Northern Illinois University offered fellow classmates up to \$300 to give up their seats in already crowded advanced computer courses.

But school officials quickly put a stop to the selling practice by changing the rules of the registration game, according to James Norris, dean of the college of liberal arts and sciences. Course candidates are now kept on a confidential waiting list and cannot register for vacated courses on a first-come, first-served basis, he said.

"Rather than wait for a semester or a summer, these students wanted to graduate and start making the \$1,500 to \$1,600 a month they believed they could with a bachelor's degree," Norris stated. "Actually, it made good sense from their point of view.

Officials first noticed the problem when signs prepared by students wanting to buy precious seating space began appearing on campus, according to the liberal arts dean.

Instead of chastising the enterprising students, Norris blamed the lack of qualified computer science teachers and the limited budget at Northern Illinois for the recent seating sale.

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## At All Higher Education Schools

# USSR Mixes Theory, Work in Computer Ed

By Yuri Topcheyev  
Special to CW

The Soviet Union gives much attention to training specialists in computing machinery. At high schools, educational plans and curricula are designed to ensure a continuous process of studying computers, their peripheral equipment, general and special software, the use of computers for controlling technological, managerial and production processes.

Students get theoretical training, and practical know-how enabling them to carry out research and experimentation, design and practical production work immediately upon graduation.

Engineer/users of systems of automated design are trained in all Soviet technical high schools. To get adequate professional knowledge of handling a computer, each student must work on a computer for 30 hours in the package mode and for 90 hours in the dialogue mode of machine time.

The overall volume of studies of computing technique to train an engineer/user is about 500 hours (of which lectures make up 300 hours, practical lessons 100 hours and laboratory studies 100 hours). In addition, third-, fourth- and fifth-year students conduct independent 50

*Prof. Topcheyev, chairman of the Research-Methodological Council for the Automation of Design at the USSR's Ministry of Higher Education in Moscow, offers a look at how the Soviet Union trains its computer scientists.*

hours of research a year.

Soviet institutes also train designers of automated design systems (systems engineers), software of automated design systems (engineer/mathematicians), operating systems and high-level automated design systems and a development engineer of algorithmic languages (mathematician/systems programmers).

### Main Contingent

In the Soviet Union a development engineer of software is trained per 1,000 engineer/users. Engineer/users of various specialties and development engineers of the above-mentioned lines comprise the main contingent of specialists in computing machinery who are trained in this country.

Soviet technical schools also train electrical engineers specialized in designing microelements, units, devices and digital computers of different purposes. In addition, Soviet universities train mathematicians who

will create operating systems, high-level algorithmic languages of a universal nature, methods of constructing data bases and automating programming processes.

First-year students at technical schools study the following disciplines: the basic data about computers and peripheral equipment, algorithmic languages and programming. To consolidate the acquired knowledge, they solve on computers practical problems associated with the fulfillment of laboratory work and home assignments in studies of general technical disciplines. These problems are tackled in special classrooms equipped with alphanumeric and graphics displays connected with collectively used computing systems.

Second-year students listen to lectures on the fundamentals of the representation of graphics information either as an independent course or as an additional section of analytical geometry and engineering graphics. There are also lectures and practical studies on the theory of algorithms and computing methods.

The course consists of the following sections: the numerical methods of solving algebraic and differential equations, the methods of the approximation and interpolation of functions, the methods of computing integrals and the processing of experimental data. These methods are brought to the phase of working programs adjusted according to the requirements of accuracy, operation speed and the volume of on-line storage.

### Different Disciplines

Third-, fourth- and fifth-year students study different disciplines depending on their specialty. For instance, when users of systems of automated design and technological preparation of production are trained in such specialties as machine building, power and mining industries, the extraction and production of petroleum products, construction, electronics and computing machinery and means of automation and instrument-making, they study the following courses: the fundamentals of constructing automated design systems, the software of automated design systems, the automation of design and technological preparation of production and the use of data bases for storing graphics and symbolic information.

The curricula for future development engineers in the Soviet Union are compiled in such a way that graduates would be able to design efficient and highly reliable multiterminal computing complexes and networks. Therefore, they must know well the principles of constructing and using various types of terminal units.

The creation of terminal equipment

and computing complexes calls for profound knowledge of specialized operating systems, dialogue languages, translators, interpreter/compiler systems, the methods of controlling the packages of applied programs and using the data base.

Third-year students begin to be trained as development engineers of the software of automated design systems. Their curricula include such disciplines as the software of systems of collective use for automating design, the technology of the programming and languages, the design of operating systems, the theory of constructing interpreter and compiler systems, the software of peripheral equipment, the establishment of data banks for automated design systems and algorithms of preparing mathematical models and methods of optimizing design.

In studying these disciplines much attention is given to the languages of the dialogue for organizing the process of the interaction of the designer and the computer.

### Technology Oriented

It is believed in the USSR that, in teaching programming languages, students should be oriented on the most widespread technology of software — the structural design of program systems. Attention should be paid to all stages of creating software: the design, the programming and the testing.

The structural programming imposes limitations on the use of existing programming facilities and methods. Taking into account these limitations, it is necessary at first to teach programming and its methods and only then concrete languages.

In the opinion of Soviet instructors, it is necessary to ensure students' profound knowledge in creating specialized operating systems designed for work in time-sharing and real-time modes. The design of such systems must be based on various methods of controlling processors, memory, peripheral units and data. Modern operating systems for design must be suitable for controlling complicated multiprocessor complexes and must have developed protective means. In creating operating systems the principle of the virtuality of resources should be widely used.

In training development engineers (systems engineers and engineer/mathematicians) the time of a student's work on a computer is 200 to 220 hours during 5½ years of tuition (of which they spend 40 to 50 hours in the package mode and 160 to 170 hours in the dialogue mode).

The wide introduction of computing machinery into the tuition process has necessitated setting up of computing centers at high schools and also of laboratories in colleges. Such laboratories have minicomputers and automated design rooms with advanced terminal equipment.

In the USSR the provision of universities and colleges with costly computers and peripheral equipment is financed by the state. Like all Soviet students, future specialists in computing machinery do not pay for tuition and get state scholarships.

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## Objections Raised To DDS Interfaces

WASHINGTON, D.C. — Modem manufacturers have objected strongly to a proposed AT&T tariff requiring users of Dataphone Digital Service (DDS) to use interfaces obtainable only from the telephone company.

The interface is known officially as a Channel Service Unit (CSU) or Data Service Unit (DSU). The former performs transmit and receive filtering, signal shaping, longitudinal balance, voltage isolation, equalization and supports loopback testing.

The DSU is a CSU that, in addition, provides bipolar conversion functions. Under the pending tariff, the CSU functions would have to be provided by AT&T-supplied equipment; this unit would be the sole standard interface for DDS.

The modem manufacturers, through their trade association — the Independent Data Communications Manufacturers Association (IDCMA) — pointed out that an "overwhelming majority" of DDS customers use the DSU. So the tariff, if accepted by the Federal Communications Commission, may require these users to replace existing equipment. For, if existing DSUs are allowed to remain in place, "AT&T will not really be making the CSU the standard interface it claims," IDCMA said.

The association also objected to letting AT&T be the exclusive CSU supplier, pointing out that such an arrangement conflicts with the Commission's procompetitive policies and "precludes independent manufacturers from producing equipment that performs other functions along with CSU functions. Combining functions in this fashion not only provides service benefits, but also eliminates technical problems created when two boxes are required to do the work that could be done by one."

## Competitors Seek To Amend Rewrite

WASHINGTON, D.C. — Bell's competitors have launched a flank attack on S. 898 — the Communications Act rewrite bill recently passed by the Senate Commerce Committee.

Three trade associations and two specialized carriers have asked the Senate Judiciary Committee to adopt amendments that would provide "adequate separation along the lines of" the divestiture being sought by the Justice Department in its antitrust suit against AT&T.

Sen. Strom Thurmond (R-S.C.), chairman of the Senate Judiciary Committee, tried but failed to obtain referral of S. 898 shortly after Commerce passed it last July. Basically, Thurmond fears that the bill would compromise the nation's antitrust policies.

Judiciary held a series of hearings recently at which competitors of the phone company discussed these impacts at length. The recommended amendments, according to their sponsors, are meant to remedy "the antitrust and competitive policy defects" revealed at the hearings.

The changes were proposed by the Ad Hoc Committee for Competitive Telecommunications, representing specialized carriers; the Computer

## Datacomm Briefs

and Communications Industry Association, representing terminal and computer systems makers; the North American Telephone Association, a trade association of independent telephone and PBX suppliers; Southern Pacific Communications Co.; and MCI Telecommunications Corp.

## Battle Brewing at FCC Over Teletext Standard

WASHINGTON D.C. — A major battle is developing at the Federal Communications Commission (FCC) over competing proposals for a U.S. teletext standard. The battle, which pits the British against a consortium made up of CBS, AT&T, France and Canada, seems likely to impact vi-

deotex as well as teletext since one way to reduce costs is to manufacture a terminal decoder that can support both services.

The British proposal would lead to decoders costing the teletext user less, but they would lack quality graphics and other enhancements built into the system proposed by CBS. The latter is an amalgam of Canada's Telidon and France's Antiope system, overlaid with the Presentation Level Protocol announced by AT&T last May [CW, May 25].

The FCC, according to a spokesman, will issue a proposed teletext standard next month, but this document will include only "system-independent" specifications. The standard will not specify whether teletext sys-

tems must use a fixed or variable transmission format or address any of several other differences between the CBS and British proposals.

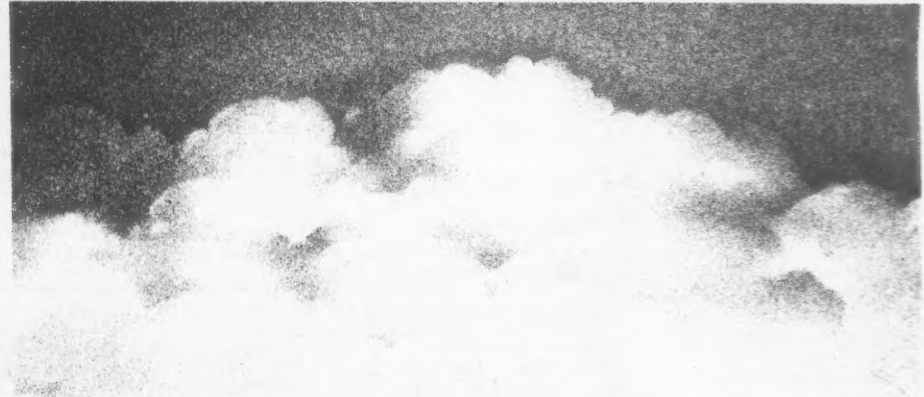
The commission will request comments on the pending proposals.

## Modem Maker Exec Calls Baldrige Biased

WASHINGTON, D.C. — Secretary of Commerce Malcolm W. Baldrige is strongly biased in favor of AT&T, Charles W. Johnson said last month in a letter to President Reagan.

Johnson, president of General Datacomm Industries, Inc., a major modem manufacturer, wants the White House to establish an industry-based task force to counteract the "high-level policymakers who insist on equating the U.S. telecommunications industry with one company — AT&T."

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# Computing Departments Draw Fire For Stressing Hardware, Not People

By Jeffrey Beeler

CW West Coast Bureau

PALO ALTO, Calif. — Many computing departments continue to rely on outmoded system design and programming techniques that wrongly emphasize the optimization of hardware rather than people, according to author and free-lance consultant Frederic Lamond.

Ineffective application development strategies account for many of the programming bottlenecks, cost overruns and systems defects that have become commonplace among many of the U.S. medium- and large-scale computing shops, Lamond said here recently during a private interview.

Lamond, who lives in the UK but was on the West Coast recently for a brief visit, urged systems departments to abandon the common practice of using technical personnel to optimize hardware and recommended instead that computing power be used liberally, even "wastefully," to maximize the use of scarce personnel.

### On-Line Programming

One of the surest ways of using available technical manpower to the utmost, he added, is for computing shops to shift from batch to on-line programming and to increase their

## Course to Cover Univac's 1100

WASHINGTON, D.C. — Performance evaluation of the Sperry Univac 1100 computer system will be the topic of a five-day course held here Nov. 9-13 and in Los Angeles Jan. 11-15. The course is sponsored by Datametrics Systems Corp.

The course will focus on how to make effective use of performance data collected from the Datametrics Systems' master log file (MLF), software instrumentation package (SIP) and transaction information processing statistics monitor (Tipstats) software programs, which run on Univac mainframes.

During the course, attendees will be briefed on how to define the data elements provided by each of these packages and to summarize and interpret their outputs, a spokesman said.

As part of the course, workshops will be held based on performance data collected at actual 1100 sites. The seminar will also rely heavily on extensive examples, checklists and sample reports, the spokesman noted.

The sessions will be overseen by Dr. John C. Kelly, a teacher and consultant in the area of Univac computer performance and the author of more than 20 technical reports on Univac system performance, the spokesman explained.

The registration fee is \$695 per person, which includes 600 pages of material on Univac performance.

Additional information on the seminar can be obtained from Datametrics Systems, 5222 Dunleigh Drive, Burke, Va. 22015.

reliance on high-level program development languages.

Lamond, who expects to elaborate on his views in a pair of four-day seminars to be held late this year in Chicago and New York, also noted the growing tendency for systems departments to replace their solitary large-scale mainframes with multiple smaller processors.

The traditional single- or dual IBM 30 series-based system, for example, is beginning to give way to alternative configurations built around clusters of 4300 series machines or their non-IBM equivalents.

At least one module in these multiprocessor complexes will have to be supplied by IBM, if for no other reason than to allow customers to continue availing themselves of the industry giant's support.

But the rest of the clusters' constituent processors could come from any number of IBM's competitors including plug-compatible mainframe manufacturers and independent vendors like Data General Corp., Datapoint Corp. and Digital Equipment Corp., Lamond said.

Thus, the computing field's apparent movement toward multiprocessor configurations will likely transform many user organizations from all-IBM shops into mixed-vendor installations, he concluded.

### Main Advantage

One of the main advantages of being able to use different vendors' processors in the same configuration is that customers in effect can broaden their range of hardware options and thus improve their chances of

finding the right solution to their individual business problems, Lamond explained.

Even though the central processors in a multivendor shop are often called upon to work side by side, each machine can continue to execute its own programs. Different suppliers' mainframes need to be software-compatible only when users have to run their old programs without alterations, Lamond explained.

For most computing shops, then, a group of medium-scale CPUs is usually a more effective hardware configuration than one large mainframe operating alone, according to Lamond. The only exceptions to the rule are installations where main memory requirements are extremely large.

One reason for the multiprocessor configurations' superiority is that they can absorb new technological advances sooner and more readily than their single mainframe counterparts.

"The more complex a system is, the greater the delay between the introduction of a new technology and its incorporation in commercially available products," Lamond said. "That's why 64K-bit memory chips, for example, appeared in the 4300 series before they found their way into IBM's H series machines.

"That's also why IBM's next generation of medium-scale processors will incorporate 256K-bit memory chips before the company's H-series successors." The 4300 series replacements will probably make their debut in 1984, Lamond predicted.

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## Means Changes for Managers

# Levi Strauss Pioneers DP Planning Strategy

By Robert Batt

CW West Coast Bureau

SAN FRANCISCO — Data processing managers in large user organizations will have to make radical changes in the way they operate if a recently developed management concept catches on.

The concept, known as Strategic Business Information Planning, is being pioneered by Levi Strauss and Co. here. Its aim is to look at a company's information needs and to determine the type of information capability it requires to reach its goals.

"As a result of this approach, data processing people are being forced to acquire a different set of skills from those they traditionally attain. You need to have a whole set of business background and communication skills, which DP people tend to lack," Donna Rund, Levi's manager of planning and control, explained.

As a DP staff gains these skills, Rund claimed, the barriers that normally separate them from the user break down, bringing increased cooperation in managing information.

"DP people are gaining more affinity with the user and at Levi Strauss the relationship is definitely not a normal systems analyst/user type of relationship. We find that users are responding very positively and changing their role from a low technology/low participation one to one of higher risk, higher profile and higher participation," she said.

The strategic planning strategy calls for two levels of action, according to Rund. These are, first, defining information needs within the group and then plotting tactically how they will be achieved and what the impact on the organization and employees will be.

"When we looked at the complexity of decision making and the number of variables that a manager needs to be aware of, it was obvious to us that 'good information' was a key to our business. The whole cost of investment in DP is now so huge, there has got to be a greater concern about getting value for money than people have yet acknowledged," Rund said.

She admitted that while the concept was not initially well understood within the company, executives realized they were spending a lot of money and that they needed some direction in obtaining what they wanted. This required them to

## 'How To's' of Security, Risk Analysis Offered

DALLAS — A training course on the "how to" of data security and risk analysis will be conducted here by the Renaissance Concept Co. Oct. 21-22.

Among the issues to be highlighted by the course are the application of data security to distributed data processing, data security administration, risk management terms as they apply to data processing and the difference between risk analysis and exposure analysis, the company said.

Course registration fees are \$295 per person from the Renaissance Concept Co., 9509 Paragon Drive, Richmond, Va. 23228.

develop a global perspective and a planning orientation that until recently did not exist.

Rund had some experience in this area in the early 1970s when she put

## Tips to Using The System

Donna Rund took 1½ years to develop the Strategic Business Information Planning concept at Levi Strauss and Co. Here are her tips for its successful implementation:

- Correctly assess the situation — What is the nature of the user base? To what extent do users plan and tend to be methodical in going into new systems?

- Prime and educate the user into realizing that he can use simple systems.

- Obtain the enthusiastic support of a senior company executive who must be prepared to champion the concept.

- Acquire people with the necessary skills who can develop an initial plan — normally for a six-month period and who are willing to invest money in the plan not knowing what they are going to get out of it.

Rund concluded: "The best way to avoid failure is to make sure there is a perceived need on the part of management to get a better grasp of information. Without this it is too easy to fail."

together a method for logical data base design at Transamerica Corp. and extended the methodology to the business at large. "This popped the question of how do you understand data and interpret it to the user so that he can also understand it," Rund said.

As a cautious experiment in this area, Levi undertook a planning study in one of its divisions to see if the system would work. Out of this study came a five-year plan on how the system will be designed, the scope of it and the goals it needs to meet.

"To implement such a system means the DP manager has to be far more business-oriented than ever before," Rund said. "Now the DP department looks at the business alternatives with the [management information systems] MIS manager more in a consultancy role than a technical one. At the same time, there has been more openness on the part of the users because they now feel DP people have an appreciation for their work and are acting as partners instead of trying to lay something on them."

But Rund acknowledged there are major obstacles to having the concept implanted throughout industry and commerce. Despite the fact that responsibility for managing information was moving more and more toward the user, the strategic planning concept was proving difficult to grasp because no one was teaching it in schools, and business in general

did not recognize it as its function.

As a result, Rund said, while almost a third of Fortune 500 companies might have tried such a system in their organizations, most have failed due to lack of expertise about how to implement such a strategy. So far, DP departments had only really used the concept for uses such as planning software resources.

"If you look at university courses it

is clear that people are not being prepared for the new information age," Rund said.

"The direction of teaching is heavily biased toward mathematics and I do not see the other part of the problem being taught — namely, what is the role of the analyst in trying to understand and manage a business? The gap is widening between universities and industry."

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# Woman Executive's Formula to Moving Ahead

By Rita Shoor  
CW Staff

CHICAGO — Add an MBA to an undergraduate degree in computer science. Develop a DP specialty that singles you out from your peers. Let people know where you want to go with your career. Then pick the right firm and stay there.

Those are Thomasyne Hubert's rec-

ommendations for the person who wants to move from the technician's cubicle to the executive suite.

Would-be directors of management information systems (MIS) are facing a self-image problem, according to Hubert, a vice-president with A.G. Becker, Inc. here. It is important for them to be recognized as seriously pursuing a definite career.

But today's DP managers, perhaps justifiably, "don't think they're treated seriously as business people." Very few directors of MIS become company presidents, according to Hubert.

## Corporate Image

The battle to project a correct corporate image is one reason why the number of women holding down administrative DP management spots is still relatively miniscule.

"In general, men are not entirely comfortable with women in business yet," Hubert said. "Why fight in two wars?" ask MIS directors who are themselves "still struggling to be perceived as serious business people," Hubert continued.

Maintaining that she had never personally been aware of a great deal of antifemale discrimination, Hubert attributed her success to being "good at what I do. I move an organization. "Staying with a single firm helped," she added, stressing that managers on the rise should "think long and hard about staying at a firm a long time"

Women are "not particularly good team players," the executive continued. They tend to be "brighter and more aggressive" than their male counterparts and become impatient with slowly turning corporate wheels.

Lack of an informal network also works against the management-oriented female, Hubert said. There

## IDC Conference to Explore Impacts on Productivity

NEW ORLEANS — Will the current wave of hardware and software developments help increase user productivity or act as a barrier to both vendor and user growth?

This will be one of the key questions examined by a number of industry leaders during a four-day executive conference here in November sponsored by International Data Corp. (IDC).

The executive conference, which is IDC's 12th and is scheduled to take place Nov. 15-18, will focus on such technological areas as higher level software, specification methodologies, extensible languages, hard software and very large-scale integration developments.

Speakers at the meeting will include Joseph Hitt, president of Magnuson Computer Systems, Inc.; Jack Davis, executive vice-president of

Harris Corp.'s data communications division; Robert Brannon, marketing manager for Intel Corp.'s Microprocessor Division; William Moore, vice-president of marketing for Perkin-Elmer Computer Corp.; and Dixon R. Doll, president of the DMW Group.

In addition, a variety of technological views will be presented by IDC staff members on such topics as office technology, networking, software and the Japanese electronics influence.

The registration fee for non-IDC clients is \$750 for the first person and \$490 for each additional person from the same company. IDC customers will be charged \$495 each.

Additional information on the conference can be obtained from IDC at 5 Speen St., Framingham, Mass. 01701.

## Small Computers in Arts Meet Set for Philadelphia Nov. 20

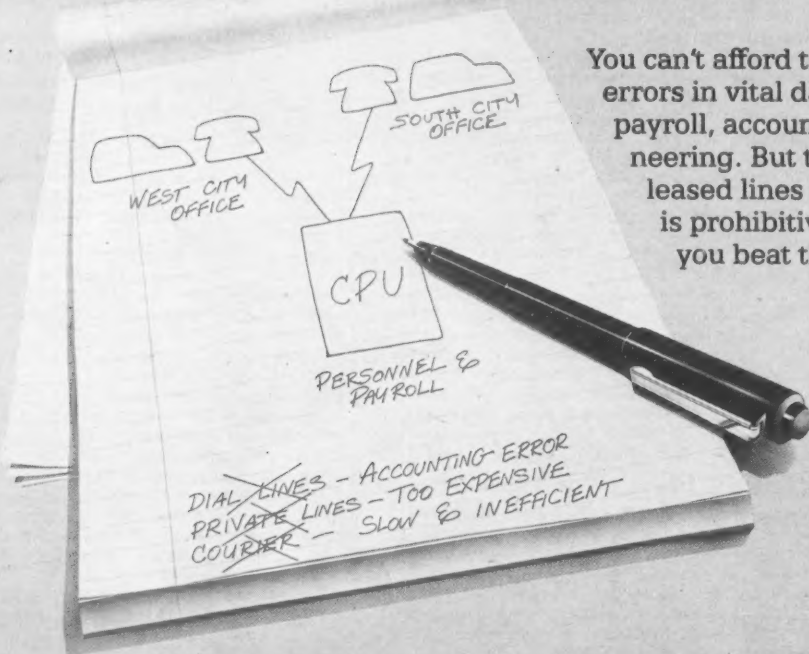
PHILADELPHIA — The Symposium on Small Computers in the Arts, slated to take place here Nov. 20-22, is being cosponsored by the Philadelphia Area Computer Society, University of Pennsylvania, the Institute of Electrical & Electronics Engineers (IEEE) Computer Society and IEEE Philadelphia Section.

The symposium is designed to increase the public's awareness of the use of computer technology in the audio and visual arts. It will be comprised of three days of tutorials,

workshops, demonstrations, paper presentations, film/video showings and a prints and plots gallery.

Workshops will encourage hands-on experience with state-of-the-art equipment in graphics and music. Registrants will also receive a copy of the proceedings and a resource guide to small computer music and graphics equipment. Full programs and registration information are available from The Symposium on Small Computers in the Arts, Box 1954, Philadelphia, Pa. 19105.

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## in DP: 'Pick the Right Firm and Stay There'

may be a goodly number of professional women working as information systems specialists now, but there were not nearly as many 11 years ago when Hubert entered the field.

However, "numbers and time will help," predicted the executive who began her career in 1970.

Armed with a master's degree in computer science, she served a six-month stint with a now-defunct consulting firm and then landed a job as director of DP training for the State of Iowa.

Hubert soon found she was "much more interested in developing DP systems" than in teaching other people about them. She switched over to writing assembly language programs for several state optical character recognition applications.

"In the early '70s," she recalled, "any skills in assembler were heavily utilized." Thus, a formal job title of senior systems analyst had a tenuous relationship with her actual duties — "primarily programming with a little bit of design."

Leaving Iowa in February 1972, Hubert took time out to have a baby and returned to Chicago. Hubert joined A. G. Becker in June 1973 as a programmer/analyst and, following her own advice, has been there ever since.

### First Assignment

The first assignment involved developing graphics programs for a

new product being introduced by the company's pension fund performance evaluation service.

Then she became project leader over a team of four programmer/analysts charged with developing graphics software for all pension products. At this point, Hubert was in charge of the projects without administrative responsibility — a common setup in DP organizations.

### Elected Vice-President

In December 1975, she began "acting as a staff person" and while retaining her functional title of project leader was elected an assistant vice-president of the firm. Hubert was involved in developing the department's five-year plan and performed a study of the 200-person clerical staff associated with the pension fund area.

"We had a need to understand precisely how they operated" in order to determine "what we could do to make it better in terms of the five-year plan," she said.

Her next assignment resulted from a major management upheaval in Becker's production department. During a time when the pension fund area decided to introduce a product previously handled through a service bureau, a lot of people left the organization, according to Hubert.

Temporarily leaving DP, Hubert supervised and trained the approximately 20 employees assigned to the



Thomasyne Hubert

project in the production area. This was her first exposure to administrative responsibilities, including hire/fire capability and salary administration.

In December 1978, she was promoted to program manager and received formal administrative responsibility for a group of technicians that eventually numbered 12. Managing them was very different from supervising nonprofessionals and nontechnicians, she said.

The production department was "more structured" than the DP area and people "tended to do their ad-

ministrative chores" — something not always true within more fluid information systems departments.

Like many MIS organizations, Becker's DP group has undergone several major restructurings. In mid-1980, the firm's corporate and pension DP departments merged and the current entity is broken into operations, administration, programming and systems analysis groups.

Hubert, with the functional title of program manager of facilities, was appointed a vice-president at the end of 1979.

Her group of 25 programmers takes on the more technically oriented and specialized projects including any system development effort that crosses department or division lines. She currently reports to the program manager in New York, who, in turn, answers to Becker's MIS director.

### Future Plans

Her future plans are tied to an interest in the Information Center (IC) concept that has been receiving an increasing amount of attention from MIS specialists.

An IC manager will eventually appear in the same organizational light as a firm's comptroller or vice-president of marketing, according to Hubert.

The IC functions as "keeper of the data for the firm" and its development will "make DP people begin to be perceived as a serious part of the organization," Hubert said.

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## PRENTICE

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## With Access Interface

# The Hartford Takes First Step to DP Network

By Lois Paul  
CW Staff

HARTFORD, Conn. — The Hartford Insurance Group here has taken the first step in linking its agents to its central computer with an interface to a minicomputer installed by one of its independent property casualty agencies.

As part of a companywide

plan developed more than a year ago to computerize its applications, The Hartford designed the Agency-Company Communication and Electronic Service System (Access) program to enable its independent agents across the country to connect their office minicomputers to the home office's DP system. The first interface was es-

tablished last month with the DeVoe Insurance Agency of New Milford, Conn., which now can gain direct access simultaneously to The Hartford's central DP systems, as well as underwriters in the company's regional office in East Hartford.

"It is really a prototype to see if we can effectively interface our automated processing system with minicomputers that agents are buying from a number of vendors," Stephen S. Witt, assistant vice-president and head of the Access group, explained.

The interface will assist agents who are contacting the home office for a firm price quote on an insurance application. The on-line, interactive system can provide an agency with commercial quotes within minutes, according to The Hartford.

Witt projected that by the end of the year, The Hartford's host DP systems will be interfacing with minicomputers located in more than 30 independent insurance agencies across the country.

### On-Site Training

DeVoe staff members received three weeks of on-site training from a team of instructors from The Hartford's commercial lines automation support and planning unit, Witt explained. The company stressed that agency employees can gain access to data in The Hartford's central DP system for their agency's accounts only.

The Hartford has made arrangements with the following vendors who sell turn-key minicomputer systems for in-house processing and applications such as word processing and file retrieval:

## Meet to Cover Computer Law

NEW YORK — The Practising Law Institute will sponsor an Oct. 19-20 seminar here entitled "Computer Law 1981: Acquiring Computer Goods and Services," which will focus on a body of law affecting the purchase of computer hardware, software and services.

The seminar was designed for lawyers familiar with commercial legal concepts but inexperienced in their application to the purchase and use of computer systems.

The seminar will be held at the Roosevelt Hotel at a cost of \$300 per registrant. More information is available from the Practising Law Institute, 810 Seventh Ave., New York, N.Y. 10019.

Arcom in Bryan, Texas; Insurennet in Emeryville, Calif.; and Redshaw, Inc. in Pittsburgh, Pa.

"We are going with those three initially because some research we did indicates they have installed more systems for agents who represent The Hartford than any of the other vendors currently on the market," he said.

The DeVoe Insurance Agency has installed the Redshaw Comprehensive Insurance System supported by Wang Laboratories, Inc. equipment. Terminals are located in each of DeVoe's agencies in New Milford, Danbury and Kent, Conn. The agent's minicomputer systems will be connected to the IBM 3033 and Amdahl Corp. mainframes at The Hartford's headquarters via telecommunication lines.

Witt said his group is attempting to build an on-line, interactive interface using IBM 3275 protocol. Because most of the agent's do not have IBM equipment, it will be necessary for vendors to build an IBM 3275 emulation capacity.

The Access group has been successful so far in achieving this, according to Witt. The other method is establishment of a batch interface on an IBM 3780 protocol. "This is based on the fact that the agent would not be an extensive user of the system because of the transaction limitations," Witt explained. "The economics dictate that we do not go on-line interactive."

To facilitate this, the ven-

dor has to build screens into software that the agent buys, Witt said, explaining that Access is working with them to do that.

"A major portion of an insurance company's activities and the agents that represent it are really in pricing what the coverage requested by the client will cost and then in producing the documents that verifies, to both the agent and the insured that the coverage is enforced," he said.

### Premiums, Losses

A third part of the business, he added, is oriented to statistics based on premiums and losses.

"Over the years the Hartford and most insurance companies have automated their internal processing of received data and generated the price and the policy and the statistical coding as by-products of that activity," Witt said.

The current steps toward networking are a logical extension, moving much of the data entry and subsequent response to the agents themselves.

Witt pointed to the increased speed and accuracy of the process, since it removes much of the manual preparation of an application.

He said the company's intention is to expand the network on a "prudent basis," after careful evaluation of its effectiveness, its usefulness to agents and the ability to cope with the installation rate that might be required.

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## New York Trying System To Combat Welfare Fraud

By Bob Johnson  
CW New York Bureau

NEW YORK — A computerized system designed to stop the passing of stolen or fraudulent welfare checks and food stamp authorizations to participate (ATP) has been approved for a Department of Social Services (Doss) pilot program here.

Under legislation supported by state Senator Frank Padavan and signed into law July 27 by Governor Hugh Carey, an electronic payment file system (EPFS) will be installed by Doss. The program is slated to begin in November.

The project comes at a time when the federal government has expressed alarm over national abuse of the food stamp program, which reportedly amounted to \$60 million in ATP losses in New York City alone. Officials said the new system will enable participating banks and cashiers to check on the validity of welfare recipients.

### Eliminate Mailings

According to Robin Swank, assistant deputy administrator of income maintenance for Doss and the program's project manager, the EPFS pilot will eliminate printing and mailing welfare checks and ATPs in selected portions of Manhattan.

A payment file on magnetic tape containing the names of those entitled to receive Doss benefits will be created daily at Doss and then sent to a Systems Development Corp. (SDC) data center, Swank explained.

The 11 participating banks and cashiers will be hooked up on-line using Bell Transaction II terminals to SDC's two Digital Equipment Corp. 11/34 CPUs, she added.

Each welfare client in the program will be issued a magnetic stripe identification card to be presented at one of the authorized outlets. Swank said that when the card is inserted into the terminal an encoded number is read and checked against the on-line file residing at SDC. At this point validity is determined, she said.

Padavan stated that the new system will allow bank tellers and cashiers to "double check" the identity of welfare recipients by using the encoded card. He noted that there are presently 26,000 reports of lost, stolen or unreceived ATPs a month. Of those 26,000, 10,000 are later revealed to be fraudulent, he said.

The creation of the project comes on the heels of recent investigations into national food stamp fraud re-

sulting in an estimated loss of \$1.6 billion.

In New York City, where the problem is most evident, investigators allege that ATPs were being stolen from the Human Resources Administration data center where ATPs are printed. Further investigation revealed that over two and a half years of data about food stamp authorizations stored on magnetic tapes were mysteriously erased.

Attorney General William French Smith announced last week that in response to this problem a special government unit would be set up to combat large-scale food stamp fraud around the country.

## Competition Opens For ICP Scholarship

INDIANAPOLIS—Competition is under way for the annual International Computer Programs, Inc. (ICP) Scholarship award for the 1982-1983 school year. Computer science or technology students who meet the qualifications will be vying for a scholarship covering one year's tuition plus education expenses up to a maximum of \$5,000 at the U.S. college or university of the winner's choice, ICP said.

Among the qualifications for which applicants will be judged are cumulative grade point average in their field of study, need for financial aid and participation

in DP-related activities. Finalists will be asked to submit an original written essay; selection of the winner will be determined by the ICP Scholarship Committee.

Applicants must be undergraduates, either sophomores or juniors, enrolled in a computer science or technology program at a U.S. college or university, ICP said. Deadline for filing applications is Nov. 15.

More information on the scholarship competition is available from Sheila Cunningham, Scholarship Director, ICP, 9000 Keystone Crossing, Indianapolis, Ind. 46240.



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## Genrad Users Group Cancels Meetings

WALTHAM, Mass. — The 1981 regional meetings of the Genrad, Inc.'s Users Group that previously were scheduled for Nov. 2-4 in San Francisco and Nov. 9-11 in Framingham, Mass., have been postponed.

The meetings will be rescheduled for early 1982. Genrad said it regrets any inconvenience resulting from this change.

Further information may be obtained from Genrad at 170 Tracer Lane, Waltham, Mass. 02254.

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## Managers on the Move

GEORGE J. GISH has been named a vice-president of the automated DP planning and control division of Security Pacific National Bank of Los Angeles.

Prior to joining Security Pacific he was manager of business systems design for the Miami, Fla.-based Ryder Truck Rentals, Inc.

He also worked in both domestic and international capacities with firms including Control Data Corp., Fairchild Camera and Instrument Co. and American Express Co.

After graduating from Arizona State University with a bachelor of science degree,



George J. Gish



Dean Liles

Gish earned an MBA from Pepperdine University. He has lectured and published articles on corporate information and modeling and business systems planning.

DEAN LILES, vice-president of administration and systems for Zale Corp. in Dallas, has recently been appointed senior vice-president of business systems at that firm. His responsibilities include corporate DP, point-of-sale functions, merchandise management systems, corporate telecommunications, corporate word processing, quality control and energy management.

A marketing specialist with IBM for 15 years prior to joining Zale in 1979 as vice-president of management information systems, Liles held various positions including national marketing support manager, retail industry manager and branch manager.

Liles earned a master's degree in economics from Louisiana State University.

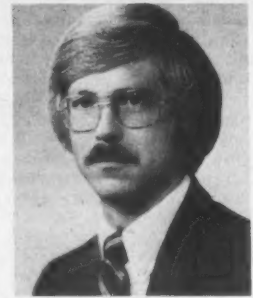
TERRY TOBIAS has been named assistant director of DP for the Church Charity Foundation of Long Island, N.Y., the health care arm of the Episcopal Diocese of Long Island.

A former IBM and American Airlines employee, Tobias worked as an associate programmer and a senior programmer. He also served with Avis Rent-a-Car Systems, Inc. as a senior programmer/analyst.

He also was manager of management information systems at Bankers Trust Co. and most recently served as systems supervisor at Burns and Roe, Inc.

Tobias graduated from St. John's University with a bachelor of science in accounting and went on to the Pratt Institute where he earned a master's degree in computer science.

VIRGIL D. REECE has joined The Credit Bureau, Inc. (CBI) of Atlanta as assistant vice-president. He is responsible for the company's DP systems and program-



Virgil D. Reece

Prior to joining CBI, Reece served since 1973 in Equifax, Inc.'s corporate DP department. Starting there as a programmer trainee, he advanced to manager of special projects, manager of systems and programming, director of systems and programming and, most recently, to director of computer operations.

Reece attended the Georgia Institute of Technology.

LESLIE C. VAUGHAN has been named director of management information systems at Aeronautical Radio, Inc. (Arinc) in Annapolis, Md.

Prior to joining Arinc, he was service manager of engineering and technical services operations at Martin Marietta Data Systems, Inc. of Orlando, Fla.

He received his bachelor of science from Virginia Polytechnic Institute.

KAREN M. MASTERS has been promoted to the new position of associate director of computer services for the Wisconsin-based International Foundation of Employee Benefit Plans. Masters was formerly the foundation's computer operations coordinator.

She joined the foundation in January 1979 after more than 15 years experience in information processing with the Kohl Corp. in Milwaukee where her responsibilities included managing computer operations and programmer/analyst work. Masters attended the University of New Mexico and worked for IBM.

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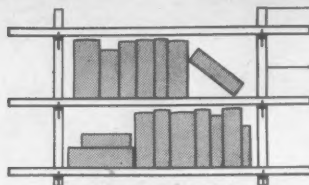
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### HOW TO PLAN, DESIGN AND IMPLEMENT A BAD SYSTEM

By Ronald B. Smith

A light-hearted view of the pitfalls that await system designers and planners — and a serious look at how to avoid them. Part 1 is devoted to case studies of projects using traditional methods, such as Flops (Field Labor Operational Payroll System) and Slips (Seniority List Informing Personnel System). The section describes how things can go wrong on a project and the lessons that can be learned from it.

Hardcover, 157 pages, \$14. Petrolcell Books, Inc., 1101 State Road, Princeton, N.J. 08540.

### THE HANDBOOK OF ARTIFICIAL INTELLIGENCE, Volume 1

Edited by Avron Barr  
And Edward A. Feigenbaum

This book is an important contribution to the literature of artificial intelligence, the product of more than five years' work at Stanford University. Four topics are covered: search, knowledge representation, understanding natural language and understanding spoken language. Each is broken down into its component topics, with original articles by a variety of contributors. It is to the book's credit that these articles have been edited and organized to present

## Off the Press

the material clearly and cohesively, so that laymen and experts alike can make sense of it. Volumes 2 and 3 are scheduled for publication this fall and

*This monthly column will describe a variety of recently published books of interest to Computerworld readers. The books can be purchased or ordered at most bookstores; CW does not sell books.*

*All inquiries for further information about the books should be directed to the publishers.*

in the winter of 1982, respectively.

Hardcover, 409 pages, \$30. William Kaufmann, Inc., One First St., Los Altos, Calif. 94022.

### COMPUTER SECURITY MANAGEMENT

By Donn B. Parker

Parker, author of *Crime by Computer* (1976), has written a new book for the DP manager. After explaining that "information is power," he goes on to show how DP relationships affect the entire organization. Components of security are thoroughly explained, as are safeguards, audits and controls. This book comes straight to the point, discusses computer security in a no-nonsense fashion and does not belabor the matter. Useful appendices include business and DP conduct, crime laws and legislation and a computer security questionnaire.

Hardcover, 308 pages, \$24.95. Reston Publishing Company, Inc., Reston, Va. 22090.

### AN INTRODUCTION TO DATABASE SYSTEMS, Third Edition

By C.J. Date

This book has become a classic reference work in data base through its previous editions. In the third edition, Date has divided the material into "basic" and "advanced," the latter "deferred to a projected supplemental volume." What remains is excellent for those who wish a thorough understanding of the topic, including college students. It covers basic concepts, storage and data structures and relational, hierarchical and network approaches to data base management systems. The concluding chapters compare and contrast the three approaches. Includes exercises, a list of acronyms and index.

Hardcover, 574 pages, \$21.95. Addison-Wesley Publishing Company, Reading, Mass. 01867.

## Guide Covers Computer Lit

WHITE PLAINS, N.Y. — *Computer Science Resources; A Guide to Professional Literature* is a newly published directory that provides an extensive bibliography of industry-related publications. The directory is published by Knowledge Industry Publications, Inc. for the American Society for Information Science (ASIS).

The text lists 800 books, 450 journals, 100 technical reports, 140 university computer center newsletters, 54 software resources and 250 programming languages. It also covers indexing and abstracting resources, Association for Computing Machinery symposia proceedings, dictionaries and handbooks and provides an historical survey of 28 common programming languages.

Appendices include a bibliography of career and salary trends in the computer industry from 1970 to 1980; society, association and user group acronyms; university computer center libraries; national and international trade shows; and a proposed expansion of the Library of Congress Classification Sections QA75 and QA76. *Computer Science Resources* is 346 pages and retails for \$59.50 (ASIS members, \$47.60). It is available from Knowledge Industry Publications at 701 Westchester Ave., White Plains, N.Y. 10604.

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## Off the Press

### BUGS

By Theodore Roszak

Rozsak, author of such nonfiction books as *Where the Wasteland Ends* and *Person/Planet*, turns his attention to computers in this, his first novel. The National Center for Data Control, at some point in the near future, has become the central repository for information. Located in Washington, D.C., the building looks like "a vast, disembodied cerebellum." The Brain meets its match in the person of a six-year-old named Daphne, who unwittingly uses psychic powers to infest the computer with killer bugs — the real kind — which eat people alive. Enter the hero, who must work with and against technology in an attempt to prevent data chaos.

Hardcover, 352 pages, \$14.95. Doubleday & Co., Inc., Garden City, N.Y.

### BASICS OF ONLINE SEARCHING

By Charles T. Meadow  
And Pauline A. Cochrane

An introduction to information retrieval and bibliographic search for end users, librarians, information specialists and students. Covers basics of interactive searching, terminals and networks, search languages, commands and procedures, storage and dissemination. Well documented with many examples and illustrations based on Bibliographic Retrieval Services (BRS), Dialog and Orbit search services. Appendices include on-line data bases. Index.

Hardcover, 245 pages, \$15.95. John Wiley & Sons, Inc., 605 Third Ave., New York, N.Y. 10016.

### COMPUTER CONTRACT NEGOTIATIONS

By Joseph Auer  
And Charles E. Harris

A comprehensive sourcebook for those who wish to learn how to successfully plan, negotiate and document a contract for data processing systems. Written for the user, the book shows how to avoid problems, pitfalls and ploys by computer vendors. Thorough treatment of details of negotiations, contract provisions, leasing, and maintenance and software agreements. Authors have solid background in professional negotiations and practicing law. Appendices cover contract checklists and requests for proposal. Bibliography. Index.

Hardcover, 390 pages, \$34.50. Van Nostrand Reinhold Co., 135 W. 50th St., New York, N.Y. 10020.

### THE SOFTWARE LEGAL BOOK

By Paul S. Hoffman

The manual covers every aspect of software development and protection for practicing managers, software developers and lawyers. Discusses software programs, documentation and maintenance. Explains proprietary interest, including copyright, trade secret protection and object code. A large portion of the manual is devoted to the software contract, including product pricing, income tax considerations, warranties that should and should not be made and special contract situations. Appendices cover a number of sample agreements.

Loose leaf binder, approximately

300 pages, \$59.95 postpaid. Carnegie Press, 100 Kings Road, Madison, N.J. 07940.

### COMPUTER SOFTWARE FOR DATA COMMUNICATIONS

By William D. Skees

First book available that deals specifically with data communications software. Explains why this software is different and describes several popular packages. Explores various protocols, including hardware, data link, message, applications and network controls. Special chapters on mixing data and control information and metacommunications. Numerous examples and applications for both message and packet switching systems. A sound, succinct introduction for managers and other comput-

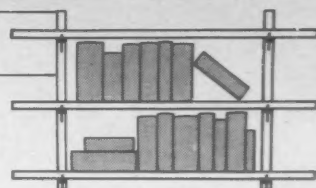
er professionals.

Hardcover, 163 pages, \$18.95. Lifetime Learning Publications, 10 Davis Drive, Belmont, Calif. 94002.

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## IBM's Short-Term Market Plans Scrutinized

By Tom Henkel

CW Staff  
MEDFORD, N.Y. — A beefed up data base management system (DBMS), better data communications and larger mass storage devices will highlight IBM's short-term big-systems marketing plan.

But according to a recent report issued by Applied Management Services (AMS), each of those advancements

hinge on IBM overcoming a nagging problem — developing new software that can run efficiently in a hardware environment much faster than its current lineup without deserting its current big-system users.

According to the report, IBM's much-talked-about relational data base, code-named System R, will be announced in early 1982, marking a departure from

IBM's current DBMS, IMS, which the report said is complicated and has many applications programs built around it.

### SBS Link

When it comes to communications, Applied Management Services said in a recent report — "IBM Hi Series, 3081 and Beyond" — IBM's relationship with Satellite Business Systems (SBS) can

be viewed as an alternate source of future revenue.

The SBS system can either be developed into a big-time long-haul communications supplier, or IBM could use what it has learned from the SBS experience and start its own long-haul communications network, the report said.

The increased speed and size of the 3081 has also put a strain on IBM to supply addi-

tional mass storage devices to its customers. The report said that IBM will announce a new line of peripherals to complement the 3081 and subsequent processors.

### In Long Term

In the long term, the report said, IBM is striving toward a processor with a one nsec machine cycle time. By the late 1980s, AMS claimed IBM will announce a supercomputer that will offer 10 to 12 times the performance of the 3081.

By 1990, IBM will be able to provide a processor that offers 25 to 50 times the processing power of the 3081, according to the AMS report. The key to these faster processors lies in researchers successfully fitting approximately 1,000 electronic switches on a single ¼-in. chip. AMS said IBM will be able to do this within a year, and scientists will be able to link sets of these chips for a test processor within two to three years.

### Josephson Junctions

IBM is also admittedly working on a Josephson junction processor that uses superconductivity to achieve speeds considerably faster than today's state-of-the-art processors.

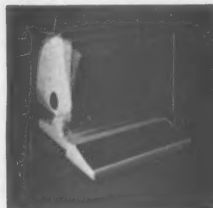
The report notes that the cryogenics approach may someday pay off for IBM, but it is still in the somewhat distant future. IBM estimates that it will take about 14 years to introduce a true Josephson processor as part of its product lineup.

The first of these larger processors will sport throughput in the 70- to 100 million instructions per second (Mips) range. That figure could jump to the 250 Mips range with subsequent processors, AMS said.

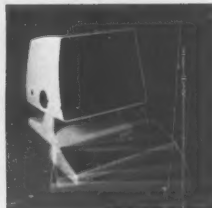
The report said IBM's objective is to come up with a processor that completes a computation step in one billionth of a second, thus the one nsec processor cycle time, which to date is beyond conventional semiconductor technology.

The AMS report costs \$80 and is available from the vendor at P.O. Box 350, Medford, N.Y. 11763.

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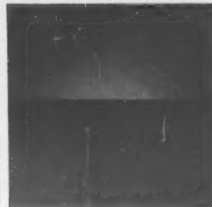
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## On Eve of Second Introduction Study Explores PCMs' Tack in Face of Series H

By Tom Henkel

CW Staff

MEDFORD, N.Y. — It's been almost a year since IBM introduced its 3081, heralded by many as the first system in the much-talked-about H series. Now industry analysts say IBM is ready to announce the second member in the line.

How does IBM's competition plan to deal with H series? A recent study by a market research firm here turned up a variety of strategies.

Hardest pressed to keep pace with IBM are the plug-compatible mainframes (PCM). These vendors were quick to respond to the 3081 announcement with processors that they claim will see them through the rest of the H series, according to a report from Applied Management Services entitled "IBM H Series, The 3081 and Beyond."

### Similar Approach

Both of IBM's big-system PCMs, Amdahl Corp. and National Advanced Systems (NAS), took similar approaches to combat the 3081, and both apparently plan to stick with that approach, according to the report.

Amdahl announced the 5860, a processor that offered slightly more power than the 3081, and the 5880, a dual-processor version of the 5860 that currently is the most powerful of domestic general-purpose processors at 24 million instructions per second (Mips). NAS simply expanded its AS/9000 line by adding a dual-processor version, the AS9000 DPC, the report said.

Both the Amdahl and NAS processors incorporated internal changes to existing processors to squeeze out more power. Amdahl, for example, installed more sophisticated logic circuitry, revamped the firmware and modified the instruction pipeline of its 470V/8 processor to in essence double throughput. It then announced an attached processor version of that CPU to again double throughput.

NAS, on the other hand, stuck with its somewhat newer top-of-the-line processor, the AS/9000, and announced the DPC, which boasts a 70% to 90% throughput improvement. But NAS, too, made some improvements to its original AS/9000 by adding more main memory, data streaming support and an MVS-SP assist capability. NAS also extended the I/O support on the AS/9000 to 32 channels.

NAS said the AS/9000 is the competitor for the 3081 and the tightly coupled dual-processor version of the processor, the AS/9000DPC, will compete with the next H series announcement, a processor more powerful than the 3081, the report said.

Outside the plug-compatible community, the report notes the 3081 announcement has not appeared to spark great concern from competitors like Sperry Univac and Honeywell, Inc. (the report did not evaluate Burroughs Corp.'s reaction to the processor).

The report claims that Univac is now working on a multiprocessor that consists of four CPUs with an

overall performance in the 25- to 30 Mips range. The report also notes that Univac has a 100-Mips scientific processor on the drawing board.

Honeywell is quoted as not being surprised by the 3081 announcement, and the firm said its DPS 8 family of processors will compete with the 3081 and some subsequently larger processors from IBM, according to the report.

### Native Mode?

The report warns that while PCM processors may appear to be competitive alternatives to the 3081, IBM has yet to announce a native operating mode for the 3081. The 3081, current-

ly with a 26 nsec processor cycle time is capable of greater throughput than currently announced, and a native operating mode may supply that extra power.

IBM has already admitted it is having problems with making the current releases of the MVS-SP operating system work with the 10-Mips 3081. For that reason, AMS said IBM will announce a new operating system in the near future that will have qualities similar to the DOS/VSE operating system available on IBM's 4300 line.

The AMS report costs \$80. AMS can be reached at P.O. Box 350, Medford, N.Y. 11763.

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## Hard-Copy Backup Required Colorado Pharmacists Can Automate, But . . .

By Tim Scannell  
CW Staff

DENVER — Pharmacists throughout Colorado can use computers to keep track of medical prescriptions, but only if they back up those computers with traditional manual systems.

That, in essence, is what a regulation passed by the State Board of Pharmacy here, which went into effect recently, says.

According to the regulation, pharmacists can use computer-based systems, but

have to immediately produce a hard copy of each prescription as it is refilled and double-check it against what appears on the computer's CRT screen.

Although the State Board of Pharmacy considers the regulation an effective way to prevent human error, a number of pharmacists in the state think the restriction is nothing more than a waste of their time and money.

On a broader level, they are also worried that Colorado's regulation may set a prece-

dent for other states that are currently considering rules aimed at computerized pharmacies. Colorado is believed to be the third state in the U.S. to pass regulations governing the use of computers by pharmacists, but the only one to require immediate manual audits.

Regulations passed in Ohio and New Mexico, and reportedly under consideration in Kentucky, ask for at least a daily hard-copy printout and check of prescriptions or let the computer do the audit checking and trailing, informed sources said.

is an error [the regulation] assures that it is caught and doesn't go through the computer," he stated.

Simmons claimed that Colorado's pharmacists had more than enough time to voice their opinions about the recently passed regulation — before it became a requirement. The board reportedly held open hearings on the proposed regulation last December and mailed out-lines of what ruling was being considered with the pharmacists' yearly license

renewal applications.

Ironically, he said, it was the pharmacists themselves who were the moving force behind the computer-aided regulation they now apparently dislike.

"The thing you've got to understand is that boards don't write regulations to make things difficult," Simmons explained. "However, once a regulation is adopted, that's it until you either get it challenged in court or go to another regulatory hearing and amend it."

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### Nard Opposed

The National Association of Retail Druggists (Nard), a professional organization located in Washington, D.C., is unofficially opposed to immediate manual audits of computer-based systems. However, it does not want to risk "rocking the boat unnecessarily" by taking a firm stand on the matter, at least until it finds out what happens in such states as Colorado, according to Joseph Schutte, owner of a Louisville, Ky., pharmacy and member of Nard's executive committee. The group plans to discuss computer auditing and checking systems at a meeting this November.

Cynthia Mantas, co-owner of a local pharmacy and outspoken critic of the board's actions, believes that the regulation is a step backward for pharmaceutical computerization.

The board "doesn't understand that 60% of all prescriptions enter into the refill process so that collectively, at one time or another, you've rendered 60% of the machine impotent," Mantas observed.

"The State Board of Pharmacy passed a regulation that, in essence, states that the computer poses a health hazard," she continued. "And everybody is concerned that it is going to spread from state to state."

Board official Mike Simmons disagrees with Mantas' view of the regulation and insists that the recent rulings benefits far outweigh its inconveniences.

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## Rent Analysis Project Aids Home Buyers

By Lois Paul  
CW Staff

NEW YORK — To continue to rent or to take the plunge and buy? That is the question and a Cornell University professor here is attempting to supply some answers to it via a computerized Equivalent Rent Analysis.

The project grew out of research conducted two years ago by Michael S. Johnson, an assistant professor of consumer economics and housing at the New York State College of Human Ecology.

The goal was to examine how different economic conditions affect housing tenure choice from a financial point of view, according to Johnson.

At the time, he was working with Cornell's cooperative extension program in a public education effort.

"I keep coming across rules of thumb all the time that people have come up with. Some of them are conflicting and not many of them very accurate," he said.

### Rules of Thumb

The Equivalent Rent Analysis program was intended to show people in the midst of a decision to rent or to buy that the rules of thumb need not apply to them, Johnson said.

"It is a very individualized circumstance. It makes a lot of difference if your choice between making a big down payment on a house is between having your money in a savings account at 5½% interest . . . or having it in money market certificates at 17%," he explained.

Participants in the program pay \$5 for the service (\$7 beginning Jan. 1)

and fill out a four-page questionnaire designed by Johnson.

He runs it in batch processing, using SAS Institute, Inc.'s Statistical Analysis System on the university's IBM 370/168.

"The program does not tell them whether they should rent or buy. It is a decision aid to help them," Johnson stressed.

### Projects Costs

"What it does is project out costs, potential capital gain, opportunity costs in terms of having down payment in money market certificates and so on," he continued.

Tying the two numbers together and discounting everything back to the present, the program converts these home ownership costs and benefits to the rental equivalent, Johnson said.

The program can help people compare buying a particular house under certain circumstances with paying a particular amount for rent. It also can tell users the number of years they would have to live in that house before it would break even, relative to renting.

Johnson has processed a little more than 1,500 questionnaires since the first part of July, he said.

Although he has steadfastly avoided using the demographic data gathered for analysis purposes, Johnson

said that based on observation, the program is reaching two key groups.

The first is the target group he wanted to reach, the first-time home purchasers who are making the initial decision.

Another group that is making use of the program, Johnson said, is people in higher-income brackets who are buying houses for investment reasons.

"To be honest, I would much rather charge them \$100 for the analysis because, in general, they are asking for advice they probably don't need," he said, explaining this was not the program's intent.

### Turnaround Time

Turnaround time currently ranges from 24 hours to a week and a half, the latter signifying keypunch problems or special circumstances such as an unusual mortgage, according to Johnson.

Currently, Johnson is working on having the software package rewritten for on-line processing.

Future plans include a complete revision of the program itself, with software developed in-house to run it on microcomputers.

Additional information can be obtained by writing to Equivalent Rent Analysis in care of Professor Michael S. Johnson, 108 MVR Hall, Cornell University, Ithaca, N.Y. 14853.



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CW914

# System Ferrets Out Typewritten Forgeries

By Bill Laberis  
CW Staff

**GAINESVILLE, Fla.** — Forgers beware: The fruits of your illicit labors may soon pass before the incorruptible inspection of a software system designed to ferret out doctored documents.

According to its creator, the Automatic Typewriter Identification (ATI) system has passed preliminary field tests with flying colors and will soon debut for the Florida Department of Law Enforcement, which funded its development.

"ATI will change the way suspicious documents are examined for court purposes and make it a lot harder to pass forged papers," said Dr. Julius Tou, who led the two-year ATI development project at the University of Florida here.

"It will do in seconds what can take hours and days to perform manually now."

Virtually all altered documents are typewritten, Tou explained, so that changes to them must be carried out on a keyboard. The changes themselves are usually slight, involving a simple altering of a date or dollar amount.

So Tou began system development by including the many and varied typing fonts "of every foreign and domestic typewriter manufacturer" in the main ATI Fortran program, storing the information on disk.

To the university's Digital Equipment Corp. PDP-11/34 minicomputer, Tou then rigged an optical scanner capable of digitizing the information contained on any

standard-size document, such as a will, a deed or business meeting minutes.

## At a Glance

By scrutinizing a suspicious document, ATI can tell at a glance whether any of the information has been changed by any typewriter other than that on which it was originally composed. If any type font other than the original appears, the system

automatically hoists a red flag.

But forgers are a very sophisticated breed and may be able to access the typewriter originally used. However, ATI is programmed to stay one step ahead of the forgers, Tou explained.

It is virtually impossible for a forger to realign a document in a typewriter exactly the way it was positioned when initially typed. ATI

thus scans for the smallest character positional changes, noting any anomalies, Tou said.

The system also can detect changes made on the original typewriter by noting the relative boldness of letters and characters on a typed document. This boldness will vary, usually in a way not detectable with the naked eye, when a different segment of the typing ribbon

is engaged in creating a forgery.

Tou said ATI will soon have a graphics display capability, and will also be expanded to scan photographs and other printed matter, such as schematics, for authenticity.

After trial runs in Florida, the program will be made available to the law enforcement agencies of the U.S. government and later to other state and local agencies.

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## Publication Set For DEC Users

**ANAHEIM, Calif.** — Seldin Publishing Co. has announced a publication aimed at users of Digital Equipment Corp. and DEC-compatible hardware.

*Hardcopy Magazine* focuses on hardware, software, peripherals and components. It also features a Business Spotlight section.

The bimonthly publication costs \$16/year from the publisher through P.O. Box 759, Brea, Calif. 92621.

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# TANDEM

## NonStop Computing Systems

## Bricklin Wins Hopper Award

LOS ANGELES — Daniel S. Bricklin, executive vice-president of Software Arts, Inc. of Cambridge, Mass., will receive the 1981 Grace Murray Hopper Award on Nov. 9 when the annual conference of the Association for Computing Machinery (ACM) opens here.

The award, given in recognition of computing achievement made by a person before his 30th birthday, cites Bricklin for "his contributions to personal computing and, in particular, to the design of Visicalc." Bricklin conceived the concept of the "Visual Calculator" while attending Harvard Business School; the program was written by Robert Frankston, now president of Software Arts.

The award includes \$1,000 donated by Sperry Univac.

## First Annual Infocom Slated For Late March

SILVER SPRING, Md. — The Institute of Electrical and Electronics Engineers (IEEE) Computer Society and the IEEE Communications Society will jointly present the first annual Infocom conference from March 29 through April 2 at the Sahara Hotel in Las Vegas.

The theme of Infocom '82 is "Data Processing-Data Communications: The Illusory

Boundary."

The conference will feature three days of technical paper presentations and panel discussions and two days of tutorials to provide information on key topics in the computer communications field, the society said. Information for those wanting to exhibit or attend is available from Infocom '82, Box 639, Silver Springs, Md. 20901.

## ISSLS to Meet Sept. 20-24

TORONTO — The 1982 International Symposium on Subscriber Loops and Services (ISSLS) will be held here Sept. 20-24. Started in 1974, the continuing conference theme is technical advances in subscriber loops or access line networks — the connection between a business and a telephone switching center.

Technical chairman for the five-day conference to be held at the Toronto Hilton Harbour Castle Convention Center is Richard E. Mosher, division manager for management and technical advisory services for AT&T International.

James D. Fahey, assistant vice-president for technology development for Bell Canada's Ontario region, is the general chairman of the conference.

More information on the conference is available from James Fahey, ISSLS '82, Fl. 22, 393 University Ave., Toronto, Ont. M5G 1W9, Canada.

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## Videotapes Cover 'EDP-Auditor'

NEWTON, Mass. — A complete set of color videotapes covering all EDP-Auditor introductory and advanced concepts and programming considerations is available from Eastern Technical Associates, Inc.

The course content is current through Release 6.0 of EDP-Auditor.

The 12 videotapes in the series provide approximately 11½ hours of lecture with more than 100 pages of accompanying student reference material and exercises, the vendor said.

New features in Release 6.0 include decimal point alignment, rounding and truncation, enlarged work field sizes, the procedural module call operation and optional sequence numbers for procedure code statements, the vendor said.

The full set of cassettes costs \$3,300 from ETA at 189 Wells Ave., Newton, Mass. 02159.

## How-To Report Covers Copyrights

BELMONT, Calif. — Softpro, a division of Government Copyright Services, has released a how-to report focusing on copyright protection and computer software.

The report is aimed at preventing software copyright infringements, according to a company spokesman.

The report normally costs \$25, but can be purchased for \$20 by ordering directly from the publisher at P.O. Box 271, Belmont, Calif. 94022.

# Software Helps Hospital Track Pacemaker Patients Via Phone Monitor Service

By Lois Paul  
CW Staff

BRONX, N.Y. — An information and reporting software package is helping monitor the progress of 2,600 pacemaker patients at Montefiore Hospital and Medical Center here.

One of the results of the new system is a recently developed telephone monitoring service whereby the patients' pacemakers are checked weekly via the telephone.

There are some 60 calls each day, which consist of the recording of an electrocardiogram, the heart rate and the pacemaker internal rate (indicating the depletion level of the battery).

The data is recorded directly in the computer (with the exception of the electrocardiogram). If a malfunction develops, the patient is called in for corrective action.

"Before the system was installed, this would have represented a tremendous amount of paperwork," Michael Benedek, coordinator of the pacemaker center's computer operations, explained.

## Expensive Operation

When Benedek came to the center in 1978, the hospital was using General Electric's time-sharing network for its DP operations. There was a single printer and a single user system, he said, adding this was slow and expensive for report generation.

A single report could cost between \$50 and \$60 and if there is a mistake and the report comes out blank, that is \$50 down the drain, Benedek added.

Benedek decided to switch from a time-sharing to an on-line, in-house system. After studying various software packages, Benedek decided to buy Mumps, which was originally created for Massachusetts General Hospital by Meditech, Inc. in Cambridge, Mass. and is used for large data base retrieval.

The next step was to locate a Mumps vendor, which was difficult because most were not very responsive, according to Benedek.

"What was even worse was that Digital Equipment Corp. wasn't too responsive," he said, noting that he was attempting to find a version of Mumps that would run on the DEC PDP-11 line of minicomputers.

"DEC had only Mumps 11 at that time. It was not a standard Mumps and they weren't pushing it too hard," he said. DEC suggested that Benedek switch to one of their other software packages, such as Trax.

He consulted Hewlett-Packard Co., Data General Corp., Perkin-Elmer Corp., Interdata, Inc. and Vista Computer, Inc. of White Plains, N.Y. Several of these did not offer Mumps on their equipment and the choice was narrowed down to DG and Vista.

"I could have gone with Meditech directly because they were supporting the Meditech software, but I needed some kind of support because, at that time, I was not familiar with Mumps at all," Benedek ex-

plained.

Vista promised to help transfer the hospital's data from the time-sharing system to a Mumps or Miis (an advanced version of Mumps developed by Meditech) file. "I think the major reason I went to Vista was because they were responsive," he added.

The hospital installed a DG Eclipse S/130 minicomputer with 128K bytes of memory; two Control Data Corp. 80M byte disk drives; and seven terminals, consisting of DG, Applied Digital Data Systems, Inc. and IBM equipment.

Vista installed the Miis software on a DG 10M-byte cartridge disk and supplied Benedek with its Datascan interactive software, which his department is using to input data.

Three operators input patient information via the Datascan interactive screens, he said, noting that the software also can be used to output and print reports.

With the system firmly in place, Benedek's pacemaker department supports its own work, as well as that of cardiology and vascular surgery. Currently, Benedek is training nurses and technicians from these departments to use the computerized system.

Doctors at the pacemaker center use the system to store patient histories, operating reports, clinic visits and telephone monitoring.

Also entered into the system are a temporary pacing report, a checkup report, information on any other hospitalization and a symptoms report.

"We are getting reports out of the system, which wasn't always easy before," he said.

# Trig Problems Get NSF Grant

SWARTHMORE, Pa. — With a grant from the National Science Foundation for \$150,000, Swarthmore College has undertaken a project to develop a method of teaching trigonometry by using color graphics on microcomputers.

Using Atari, Inc. microcomputers, the project is geared primarily to the standard high school trigonometry student. It is hoped, however, that it will eventually be of value for remedial and refresher work.

The director of the project is Prof. Eugene A. Klotz, Ph. D., of the college's math department. Klotz describes the project as visual, user-controlled and user-oriented. He said its goal is to develop prototypes of high quality units in trigonometry that will make the subject easier to understand and will also be aesthetically pleasing and entertaining.

Also serving on the project's team is Prof. Eva Travers, Ed. D., director of the College's program in education, and computer consultant Theodore H. Nelson, Swarthmore class of 1959 and author of *The Home Computer Revolution, Computer Lib, and Literary Machines*.

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# Larry Long's List of Professional Societies

• **AUUA, Inc. (Formerly the Americas Univac Users Association)**

*Purpose and Objectives:* AUUA, Inc. is a group of member companies with Sperry Univac computer equipment organized to further the art of DP, to assist in solving mutual problems and to provide an interchange of ideas and information between the user and manufacturer.

AUUA has as its stated purpose "to stimulate the development of, and to disseminate information concerning, techniques for the preparation and operation of electronic information processing systems for Sperry Univac computers, their peripheral equipment and extensions and successors thereof."

To achieve that purpose, it has est-

ablished further goals: To advance the art of electronic information processing through mutual education

*Larry Long is compiling a list of professional DP/Computer societies and organizations. To be included, societies and organizations should send a brief description of their purposes and objectives to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.*

and interchange of ideas; to recommend standards for all communications made through the established channels of the association; to provide feedback to the manufacturer

pertaining to equipment and software needs; and to conduct conferences to further the purpose of the user association.

*For More Information:* James E. Stine, President, AUUA, Inc., U.S. Navy, Fleet Material Support Office, Code 94X, Mechanicsburg, Pa. 17055.

• **THE SOCIETY OF CERTIFIED DATA PROCESSORS (SCDP)**

*Purpose and Objectives:* The Society of Certified Data Processors was formed in 1971 to represent exclusively the interests and wishes of certified computer professionals. The SCDP has pursued its goals at ICCP, Ansi, Codasyl and in cooperation

with other industry associations.

The SCDP is a "grass-roots" society wherein the members control what positions, actions and directions the organization takes. It is the only organization exclusively representing the ICCP certificate holders in these forums.

*For More Information:* SCDP, Suite 325, 1835 Union Ave., Memphis, Tenn. 38104.

• **STEEL INDUSTRY SYSTEMS ASSOCIATION (Sisa)**

*Purpose and Objectives:* To share information in the steel industry regarding the latest developments, technology and installations within the various member companies. Two-day meetings are held three times per year at various locations in the U.S. and Canada. Meetings include formal presentations and open discussion on topics of mutual concern.

Currently there are 66 individual members representing 42 steel companies.

Sisa is an affiliated section of the Association for Systems Management. Membership is available to individuals employed by a steel company whose principal business is basic steel production — specifically involving the use of melting and rolling facilities.

*For More Information:* T.C. Jeffers, Manager, Corporate Marketing and Manufacturing Systems, Kaiser Steel Corp., P.O. Box 217, Fontana, Calif. 92335.

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# What's Going on With DBMS?

**Q** We are in the process of evaluating data base management systems (DBMS) and expect to begin the conversion process within the year. As an IBM user, we have a variety of options. I would appreciate hearing any insights you might have regarding recent breakthroughs or current research that might affect our decision.

**A** The DBMS commercially available today are passive and respond only when queried. Current research on "alerter" systems promises to enhance the functional capabilities of information systems by enabling the user to assume a dynamic attitude toward the data base.

Briefly stated, an alerter system monitors a data base and takes predefined actions when it detects the occurrence of a dynamically specified condition. Alerter systems will add a new dimension to current data bases and, therefore, to the computer-assisted decision-making process.

I would anticipate that alerters will be a commercial reality within the next five years. Initial alerters will be dependent on a specific DBMS, so you might ask potential vendors about their plans for incorporating alerter capabilities.

**Q** Although I live in a state with clean indoor air, I still breath carbon monoxide from the smokers in my department more often than I'd like. I'm looking for a compromise to the smoker vs. the nonsmoker problem. I have two questions:

1. How much do the poisons from smoke impact the productivity of programmers and systems analysts?
2. What are the solutions companies have found to the smoker vs. nonsmoker problem?

**A** A chain-smoking manager with the power to effect a compromise will probably not be very sympathetic to your plight. However, if your manager is a nonsmoker, I'll offer these thoughts.

There is a paucity of data on programmer and systems analysts productivity and none highlighting the impact of smoke on productivity. However, survey results published in a Dartnell Target Survey indicated that 43% of the managers surveyed thought workers would be more productive if they did not smoke. Interestingly, another Dartnell study revealed that 76% of the chief executive officers surveyed did not smoke.

The following are representative statements from survey respondents linking smoking and productivity: "Take the time to reach for a cigarette, light it and take a couple of puffs; add that time to all employees and how many times they light a cigarette . . ."; "You have the time spent smoking plus the usual conversation ensuing with another employee. Both employees could be stocking, selling, cleaning, merchandising or many other things."

In defense of the smokers (and I'm

not one), some would argue that a periodic break from the routine increases productivity. On the other hand, the nonsmoker would question how one could break his concentration 20 to 40 times a day and still be as productive.

The management information systems (MIS) environment cannot afford the luxury of physically separating smokers from nonsmokers since project teams are still formed by optimizing the mix of skills.

As a footnote, the Darnel study indicated that 3% of the companies surveyed offered incentives for quitting. Considering the cost of absences due to smoking, premature deaths, direct health care costs and probably productivity, these incen-

tives are sound financial investments.

**Q** What is the historical origin of the memory unit "K"?

**A** The letter "K" is widely used to represent the quantity 1,000. "K" is an abbreviation for kilo, a word element meaning 1,000.

Someone, and I know not who, observed that 2<sup>10</sup> (1,024) is approximately equal to 1,000. The first thing we knew 4,096 bytes became 4K bytes and the rest is history. The letter "K" became part of computerese and consequently was picked up by users in virtually every functional area. Hav-

## Turnaround Time

By Larry E. Long



ing little need for an abbreviation for 1,024, users adopted the original meaning.

*Long is a professor at Lehigh University, a DP consultant and author.*

*Have a question? Send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.*

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## Electric Mail Net 'Builds Bridges' To Hearing World for the Deaf

By Lois Paul  
CW Staff

FRAMINGHAM, Mass. — Electronic mail is "building bridges to the hearing world" for the deaf community here.

During a now-concluded three-year test funded by the U.S. Department of Health, Education and Welfare (HEW), 65 deaf individuals were connected to an electronic mail network called Deafnet, which is based on GTE Telenet Communications Corp.'s Telemail system.

The goal of the project, sponsored by the Deaf Communications Institute, Inc. (DCI) here, was to evaluate the effectiveness of computer-assisted telecommunications for the deaf in the Boston area.

Fifty computer terminals were purchased and placed in the homes of 34 deaf people in the Boston area so they could dial in to the network



Deafnet is explained in sign language by Mary Robinson, executive director of the Deaf Communications Institute, Inc., which sponsors the system. On the terminal and overhead screen is a 'bulletin board' which lists information and events for deaf persons.

with a local telephone call.

"We began a message communication computer conferencing and built up bulletin boards by adding service providers who put some information into the system," Mary J. Robinson, executive director of DCI, a nonprofit service organization, recalled.

During the test, the organization switched from Bolt, Beranek and Newman, Inc.'s Hermes message system to GTE's Telemail, Robinson said, because the former was an expensive research and development tool.

"The point was to use something already in existence and see if it could be used by the deaf," she explained. GTE was offering nighttime rates at a reduced amount, so they chose this system because they felt it would be economical.

"For the most part, hearing people are just not aware of the tremendous communication barriers which deaf people have, both in communicating person-to-person and using the telephone," Robinson said.

She is working on the final report to HEW on the three-year project. The deaf participants are doing the evaluation, she said, noting they also are doing the training and teaching the system to each other.

Each user of Deafnet has a telecommunications device for the deaf (TDD) that employs a modem to connect to the network via regular telephone lines.

DCI has an account with GTE's Telemail system and brokers time on the electronic mail system to the deaf users. "We are asking people to

pay for their connect charges," Robinson said, noting DCI is encouraging use of the system at night when rates are cheaper.

Some of the major users of a system like Deafnet are deaf people who are involved in organizations such as the National Association for the Deaf, the World Deaf Adult Society and Telecommunications Devices, Inc.

"There are board members who literally are in a dozen major cities that have telephone connections for Telemail. The two just seem built for each other," Robinson said.

### Need to Communicate

These people have a need to communicate with each other as part of their ongoing advocacy efforts and just on a social basis. Electronic mail can accomplish this, she said, as well as cut the costs of high telephone bills.

A deaf person can use the system for eight hours a month and thereby keep in touch with other board members and committee members for about \$32 a month, according to Robinson.

She envisions a growth in the network when these first national users encourage more of their branches to participate. Future users could be athletic groups and clubs that have deaf members, students and the general deaf population.

To encourage new subscribers to the network, DCI is offering a 50% discount and a subsidy of up to \$20/mo to new users, Robinson said. DCI is located at 95 Bethany Road, Framingham, Mass. 01701.

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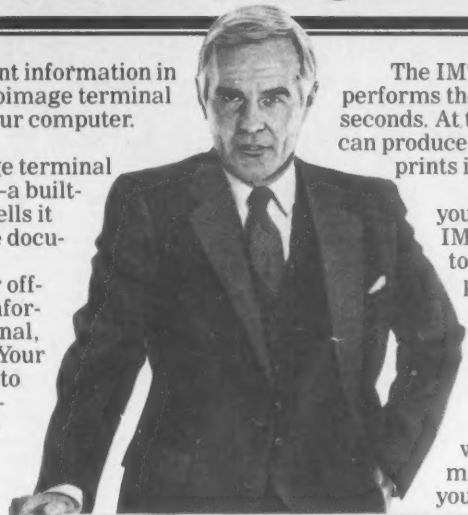
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# Disabled Youth's Program Aids Handicapped

By Bob Johnson

CW New York Bureau  
NEW YORK — A 14-year-old boy misdiagnosed as mentally retarded captured fifth place in Johns Hopkins University's National Search for Personal Computing to Aid the Handicapped, held here recently.

Joseph Terpenning, a wheelchair-bound victim of cerebral palsy, wrote a com-

puter program on his Radio Shack Corp. TRS-80 micros to help disabled children improve math, reading and spelling skills. Terpenning was competing against 50 contestants who were mostly computer professionals, according to one of the search's organizers, Mike Krawetz.

Written in Basic II and programmed on his personal TRS-80, Terpenning's math

software consists of easy, medium and hard problems in addition, subtraction and multiplication.

"A child chooses the category of math he wishes to do and, when he has mastered it, he can move on to a more difficult section," Terpenning said. "Four math problems appear on the screen at one time and for each four answered correctly, a graphics star appears on the screen.

"The computer will enter a correct answer if any of the

problems are wrong so a child can see his mistake and the correction below it."

Terpenning's reading program is designed to run at speeds of 100- to 500 word/min, again with the ability to increase as the child progresses. In addition, the program prints out in a 32 char./line format instead of the usual 64 char./line because Terpenning felt it is easier for a disabled child to read.

Taught how to program a TRS-80 two years ago at the Nanuet (N.Y.) Middle School, Terpenning was asked by an instructor to try computers. He became hooked. "I wanted to know everything he knew and I learned everything I could," he said.

## More Than Win

Terpenning's accomplishment ranks as more than just the winning of a prize and national competition with his family. The boy's mother, June, recalled just how physically and mentally disabled Joseph was before she adopted him when he was four years old.

She said he would never have been able to leave Mary Immaculate Hospital in Queens, N.Y., if it had not been for the help of Sister Patricia Ann Thomas, the head of physical therapy there.

"Sister Pat told me that doctors at that time said she should 'put Joseph back in his crib; there's nobody home upstairs.' But with the help from Sister Pat, al-

though physically handicapped, Joseph responded mentally," she said. "We didn't ever believe Joseph was mentally retarded; he just didn't look that way to us.

"We are not a computer family," she added, "and now when Joseph talks about computers, he is talking over our heads."

## Entering Competition

The boy became interested in entering the Johns Hopkins' competition when he read an ad by Radio Shack announcing sponsorship of the contest. "I read the ad and I said, 'I'm gonna try.'" As one of the regional finalists, Terpenning will go on to national competition in Washington, D.C., to be held some time this fall. A \$10,000 cash prize will be awarded to the first-place winner of that competition.

Although writing programs is one of his interests, Terpenning is not sure that programming is his life's ambition. He said that the idea behind writing his program was to let the disabled acknowledge the fact that the computer is an excellent learning tool.

"This type of program can be adapted in many ways and different grade levels to accommodate the child being taught. Whether the child uses the computer in school, or is fortunate enough to have one at home as I do, computers have a great future in aiding the handicapped," he said.

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For more information, contact Ken Kaplan (212) 889-3386.

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Photo by Mike Krawetz

Joseph Terpenning

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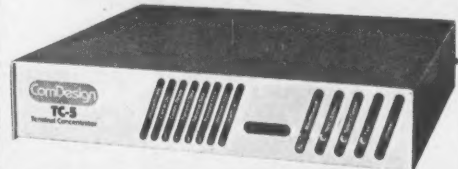
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video world  
with his  
computer art.**

**There's a lot that's  
new on "Computerworld"  
this fall...**

SCHEDULE FOR THE WEEK OF:  
Sept. 14 (Monday) through Sept. 20 (Sunday).

Market	Station	Ch	Day	Time
New York*	WOR*	9	Sat	9:30AM
Los Angeles	KWHY	22	Sat	Noon
Chicago	WFLD	32	Sat	9:30AM
San Francisco	KTSF	26	Sat	9:30AM
San Jose	KSTS	48	Sun	4:30PM
Philadelphia	WTAF	29	Tues	10:30PM
Boston	WLVI	56	Sat	11:30AM
Washington, DC	WDCA	20	Sat	12:00Mid
Dallas/Ft. Worth	KNBN	33	Sat	12:30PM & Tues 7:30AM
Detroit	WXON	20	Sat	10:00AM
Houston	KHTV	39	Mon	12:00Mid
Atlanta	WATL	36	Sat	1:30PM
St. Louis	KDNL	30	Sun	5:30PM

\*WOR is a superstation carried on many cable systems around the country. Check your local listings.

This week, "Computerworld's" cameras visit rock star Todd Rundgren at his computerized video studio near Woodstock in upstate New York to see how he blends music, video technology, computers and art work to produce what he thinks will replace the home stereo as we know it.

Plus, we'll visit the Franklin Park zoo to see how a new home for hippos and other African animals was designed by a computer that took into account the design of the existing buildings at the zoo. And you'll see computers use hair growth to check your health and advise doctors where to look for possible problems.

That's just some of what's new this fall on "Computerworld." We also have new talent, new graphics, a new format and a lot of new places we can be seen. Check the schedule below this week and in the weeks to come for new stations and times. And if you're in one of the markets which hasn't been able to get us in the past, you might be able to get us on cable via superstation WOR, which has been added to our schedule.

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**Note to advertisers:** If you are interested in buying commercial time on "COMPUTERWORLD," call Bill Dwyer at (800) 343-6474 for more details. In Massachusetts call (617) 879-0700.

# Computer Lights Up New York Street Life

NEW YORK — It will be harder to find a dark street on which to get mugged now that a computerized system has been installed to help keep New York City's 320,000 streetlights working.

The citizen's streetlight complaint system running on an IBM 370/158 was put into operation this summer. When a complaint is telephoned to the Department of General Service's Bureau of

Electrical Control, operators ask questions about the nature and location of the problem; the operator then enters this information into a terminal that is connected via dial-up lines to the CPU, located in the city's municipal building.

### Problem Verified

The computer verifies the data, determines where the problem exists, whether it is

an emergency situation and decides which of the five contracted maintenance companies will be contacted to correct the problem, a spokesman said.

The city has installed IBM 3276 terminals and 3288 printers in each contractor's field location. When the main computer selects the problem spot, it also prints out a work order at the contractor's site.

Interactive communication between the contractor and the central complaint bureau is accomplished via the terminal, explained Joseph A. Giannotti, deputy commissioner for computer services for the Department of General Services.

In this way the contractor relays that the work order has been received and when the work will be completed, he said.

More than 80,000 complaints on streetlights are received by the department each year from affected New Yorkers.

Addressing this problem, Department Commissioner James F. Capolino said the new system is central to providing better service.

"New Yorkers are concerned about the energy wasted when streetlights are out," according to Capolino. "The computer will help us alleviate these concerns," he said.

### Time Saver

The old complaint system was manual and it took a long time for complaints to be resolved, Capolino explained.

The new system, which will include a data base of information for equipment comparison and recording contractors' performance, will cut that time dramatically, Giannotti predicted.

Officials also noted that the cost of maintenance and manpower will be decreased somewhere near \$8 million thanks to the system.

## Ellis to Serve On SIG Board

MORRISTOWN, N.J. — Robert A. Ellis, manager of computer graphics applications at Boeing Computer Services Co., has been named to a two-year term on the Association for Computing Machinery's (ACM) Special Interest Group (SIG) Board, which is responsible for overseeing the operation of the association's more than 30 SIGs.

Ellis has also been appointed to the Ad Hoc Conference Procedures Committee, which evaluates the adequacy and appropriateness of existing ACM conference procedures.

In addition, Ellis continues as an elected director of the ACM's SIG on computer graphics.

## Magazine Set For PDP-11 Users

NORCROSS, Ga. — Digital Publications, Inc. (DPI) has announced it is offering new subscribers to its *Electronic Magazine* a 300 bit/sec auto answer/originate smart modem.

The magazine is concerned with Digital Equipment Corp. PDP-11 users. The modem is said to feature auto-dial under program control using any programming language.

The package price for the subscription is \$245, DPI said from Suite 14, 5952 Peachtree Industrial Blvd., Norcross, Ga. 30071.

# How To End Your Programmer Shortage

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September		
21	San Francisco, CA	Holiday Inn Financial Dist.
22	Minneapolis, MN	Radisson South
23	New York, NY	World Trade Institute
24	Chicago, IL	Conrad Hilton
30	Arlington, VA	Hyatt Regency
30	Houston, TX	Stouffers Greenway Plaza

October		
1	Los Angeles, CA	Bonaventure Hotel
1	Philadelphia, PA	Stadium Hilton
1	Detroit, MI	Detroit Plaza
6	Boston, MA	Hyatt Regency Camb.
6	Costa Mesa, CA	South Coast Plaza
6	Milwaukee, WI	Red Carpet Hotel
14	Phoenix, AZ	Phoenix Hilton
14	Kansas City, KS	Radisson Meuhlebach
19	New York, NY	Warwick Hotel
19	Charlotte, NC	Radisson Plaza
20	Cincinnati, OH	Stouffers Tower
20	Dallas, TX	Le Baron Hotel
21	Cleveland, OH	Stouffers Inn
21	Seattle, WA	Park Hilton
29	Denver, CO	Stapleton Plaza

November		
2	Westchester, NY	Rye Town Hilton
12	Atlanta, GA	Hyatt Regency
12	Saddle Brook, NJ	Holiday Inn
17	Pittsburgh, PA	Pittsburgh Hilton
18	San Antonio, TX	Marrriott Hotel
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19	Toronto, ON	Westin Hotel

December		
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## Have it Your Way — at Push-Button Speed

By Lois Paul  
CW Staff

TEWKSBURY, Mass. — A submarine sandwich that is truly untouched by human hands reportedly can be produced in seven seconds by a computerized machine developed here.

The Compuserve 2000, developed by engineers Robert K. Hanson, Edward Lewis and Donald A. Olson, is designed to make the sandwich "your way." Its control panel enables a hungry user to select, for example, roast beef, onions, pickles, tomatoes and to hold the lettuce.

The machine is based on microprocessor technology designed by

Lewis and Olson. Hanson developed the mechanical portions.

The prototype machine took a year and three months and approximately \$4,800 to develop, Hanson said. It served its first sandwich at about 2 a.m. on April 2.

### Why No Subs?

The idea for the computerized sandwich machine began in 1977 with Hanson, an employee at Compugraphics Corp. He said he wondered why no sub shops ever grew to the extent of fast food chains like McDonald's. "They obviously make better sandwiches than the hamburgers," he ex-

plained.

The reason seemed to be speed and consistency. People have a half hour for lunch and the sub shops cannot make the sandwiches fast enough. Also, the sandwiches are different every time, unlike the hamburgers at the chains, he said.

The Compuserve 2000 is designed to make sandwiches the same every time and fast, according to Hanson. A customer makes selections on a panel that lets him choose the ingredients for the sandwich. A press of a process start button begins the sandwich preparation.

Currently, the user has to place

an open roll under the machine's v-shaped compartment during the process. The production model, which Hanson anticipates completing within a year, is designed to produce the sandwich in about four to five seconds wrapped in boxes similar to Burger King's specialty sandwiches. Affixed to the box will be a tape indicating the ingredients of the sandwich.

The Compuserve 2000 will sell for roughly \$20,000 to \$25,000.

People's first reaction to the idea has been "the computerized what?" Hanson said. Once he gets past this, Hanson anticipates a large market for the Compuserve 2000 and future models.

## Data Communications Terminals.

A Special Report in  
**Computerworld**  
on October 26th.

It's not easy keeping up with this ever-changing terminal market—more intelligence in terminals means a wider range of functions and greater flexibility of applications for the end-user.

Edited by Bruce Hoard and Phil Hirsch, this **Computerworld** Special Report will feature tutorial essays, accounts of user experiences, reviews of current products and speculations about the future. And we'll be giving you the most current information about important subjects such as:

- How to get the most out of dumb terminals.
- How terminals are making computers more responsive to user's needs.
- What the guidelines are for evaluating terminal equipment.
- What's happening with automatic teller machines.
- How to configure networks for multiple applications.

If staying abreast of this rapidly changing field is important to your job, don't miss our October 26th Special Report. And if you're a manufacturer or marketer of data communications terminals or systems, your ad here will reach more than half a million readers (including 114,408 paid subscribers ABC 6/30/81). Ad close is October 9th. Call your **Computerworld** representative for all the details. Or, to reserve space for your ad, call Frank Collins at (617) 879-0700.



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## Course Teaches Structured Cobol

ARLINGTON HEIGHTS, Ill. — A new instructional program for the data processing industry, "Structured Cobol With Dan McCracken," is now available from Advanced Systems, Inc. (ASI), a multimedia training firm here.

The course, composed of 11 units, was developed in conjunction with Daniel M. McCracken, past president of the Association for Computing Machinery.

### Structured Programming

The self-contained program teaches structured programming methodology as well as the Cobol language. It consists of 11 videotapes, three audiotapes, a coordinator's guide, a student guide with directions and reading assignments, a syntactical handbook and a student workbook, which gives the student an opportunity to write 11 complete programs, each of which can be compiled and tested.

Sample programs, solutions, test data and sample program output are also included.

The program can be self-paced or used in a group environment. Cost and additional information can be obtained from ASI at 2340 S. Arlington Heights Road, Arlington Heights, Ill. 60005.

## 'Computer Culture' To Be Examined

TORONTO — Computer Culture '81, a seven-day program focusing on the cultural aspects of computers and microelectronics, will be held here Nov. 16-Nov. 22.

Sponsored by the Photo/Electric Arts Foundation, the program will be held at the Ontario College of Art, the Art Gallery of Ontario, the Flavio Belli Gallery, Gallery 76, the Music Gallery and the Village by the Grange.

It will feature displays and demonstrations, an open conference, an art show, a multimedia tribute to Marshall McLuhan, a day of computer animation and a computer music symposium.

Further information is available from the Photo/Electric Arts Foundation, Box 7109, Postal Station A, Toronto, Ont., M5W 1X8.



## November Symposium Set On Medical Applications

WASHINGTON, D. C. — The Fifth Annual Symposium on Computer Applications in Medical Care (SCAMC) will be held here Nov. 1-4.

The Society for Advanced Medical Systems, the Institute of Electrical and Electronics Engineers (IEEE) Computer Society, the International Group on Biomedical Computing of the ACM, the Mumps Users Group and the Hospital Information Systems Sharing Group are among the professional societies, government agencies, universities and research organizations that are jointly spon-

soring the symposium.

The conference will feature four days of technical sessions on new developments in clinical information systems and software design approaches, as well as commercial exhibits of new microcomputer systems capable of supporting clinical applications.

The sessions will include technical papers, workshops, demonstrations and tutorials.

Further information on the upcoming event is available from Janice Eldridge, SCAMC Registrar, Office of Continuing Medical Education, George Washington University, 2300 K St., N.W., Washington, D.C. 20037.

## Courses Offered At User Sites

PALO ALTO, Calif. — Informatics, Inc.'s Professional Services Group is offering a series of classes on computer programming, design and analysis that can be held at a user's site.

The courses are designed specifically for programmers, program analysts, data base administrators and systems programmers. Languages covered are assembler, Cobol and Job Control as well as IBM's Time Sharing Option.

The course catalog consists of 60 one-day modules or options aimed at specific expertise levels — fundamental, intermediate, advanced and supplementary. Each option covers a specific subject such as program sequencing, logical branching or inspections.

A course can consist of any combination of the 60 options. Once the options are selected, the course program is offered on a bundled price basis, plus airfare to the customer's site. The price includes all instruction and instruction materials, the vendor said.

Further details are available from Bill Dwyer, Informatics, Inc., 1121 San Antonio Road, Palo Alto, Calif. 94303.

## Meets to Cover DP Engineering

WALTHAM, Mass. — Five-day seminars on information engineering techniques will be conducted by Clive Finkelstein in eight cities from September to December.

Entitled "The Information Engineering Revolution," the seminar will be presented in Boston (Sept. 14-18); New York (Sept. 28-Oct. 2); Washington, D.C. (Oct. 5-9); Chicago (Oct. 19-23); Detroit (Nov. 2-6); Houston (Nov. 16-20); Los Angeles (Dec. 7-11) and San Francisco (Dec. 14-18).

The seminar will present an overview of information engineering methodologies, with emphasis on the user-driven analysis and design methods that provide requirements specifications to DP, according to the vendor.

The five-day seminar costs \$1,100. Further information can be obtained from Information Methods Corp., 504 Totten Pond Road, Waltham, Mass. 02154.

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5. The DP manager knows his shop—where equipment is and how it's configured.

**NOT VERY VALID REASONS.** In fact, they range from ridiculous to risky. But, whatever the reason, most all DP shops are without a comprehensive hardware accounting system.

In the rush to automate business operations, somewhere along the way no one devised a system to automate the control function for the automation equipment itself. Until now.

Policy Management Systems has researched, created, and tested the Hardware Accounting System.

HAS is a powerhouse. It's CICS-oriented with on-line inquiry and real time update. HAS incorporates all the functional capabilities required to manage and control DP equipment effectively. This includes inventory control, configuration analysis, budgeting, rental/lease

accruals tracking, billing verification, alternative procurement analysis, resource allocation and planning, and more.

All the concerns that cause the accountants and auditors to lose sleep and cause your company to lose valuable DP dollars. All analyzed in one simple, comprehensive software package.

In addition, HAS's integrated data base supplies current information about equipment location, sales and service vendors, and individual machine price levels and descriptions.

With an average of over 25% of all DP costs invested in hardware, HAS performs a critical function in ensuring accurate, adequate control for this increasingly expensive resource. Investigate PMS's Hardware Accounting System for your company. There's no good reason not to.



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## Government-Run Systems Win Urisa Awards

WASHINGTON, D.C. — The Urban and Regional Information Systems Association (Urisa) recently announced the recipients of the first "Exemplary Systems in Government" awards.

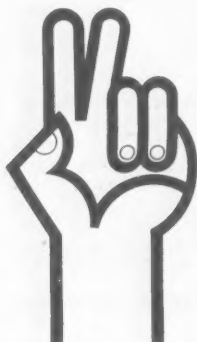
The recipients are the District of Columbia's Municipal Automated Geographic Information System; the City of Eugene, Ore.'s Fire Information Management System; the City of Milwaukee, Wis.'s Policy Development and Management Information Systems Project; Montgomery County, Md.'s Parking Violation System; and the U.S. Department of Commerce's Decision Information Display System.

Awards were presented at the 1981 Annual Urisa Conference held in New Orleans in August.

Intended to recognize outstanding achievement by units of government in the effective use of information systems technology, the awards were based upon submissions made by each of the participants.

A panel of reviewers evaluated each of the proposals, concentrating on the "usability" and "direct benefits" of each system. The awards are for practical, operating information systems that are having a positive impact on the operations of the government and, as a result, a positive impact on the citizens, according to Urisa.

Further information on the awards is available from Urisa at Suite 300, 2033 M St., N.W., Washington, D.C. 20036.



## Computerworld covers Info '81 in two consecutive issues.

October 12th Info '81 Show Issue  
October 19th Info '81 Wrap-up Issue

The computer community regards Info '81 as the most important information equipment show in the East. And **Computerworld** is responding to your interest in this show with two-part, total coverage in its October 12th and 19th issues.

You'll get coverage of the whole show at the New York Coliseum. If you're one of the more than 22,000 corporate executives, DP managers and administrative managers planning to attend the show—you'll get an invaluable guide in the October 12th Show Issue of **Computerworld**. And if you can't attend this year—let **Computerworld** tell you what you're missing.

You'll get a complete wrap-up of the speakers, the deals and the dealers in our October 19th issue. You'll read what went on in those four days; compare the best ideas of the best minds in the industry—and find out how the new products work, what they can do for you, and when, where and how you can get them.

**Computerworld** can promise you all this because we'll be there in full force. If you'll be there too, drop by Booth #2523 for a free copy of our Show Issue. It'll outline the high points for you—exhibitors, speakers, special events—along with a guide to night life in New York. These Show and Wrap-up Issues of **Computerworld** will help you keep abreast of the revolutionary changes taking place in the use of information systems and the impact they can have on your business—you can't afford to miss them!

And if you're exhibiting, be sure to put your ad in both of these issues with your booth number. Let **Computerworld** direct your customers to your display. Your **Computerworld** representative can give you full ad planning assistance. Or, to reserve space for your ad, call Frank Collins at (617) 879-0700.

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October 12th Show Issue  
October 19th Wrap-up Issue

September 25th  
October 2nd

October 2nd  
October 9th



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## 'ATM Manual' Gets Update

BETHESDA, Md. — Computer Based Solutions, Inc. has announced the availability of the first update of its *ATM Manual*, a comparative analysis of four vendors of automated teller machines.

The additional volume contains six sections, including characteristics of the equipment, maintenance support, interface with existing systems, hardware and software availability, vendor support programs and the decision-making process.

The updates are free to all subscribers of the publication or for an initial subscription fee of \$495 from Computer Based Solutions, Inc., Suite 603 E., 7315 Wisconsin Ave., Bethesda, Md. 20014.

## Cannon Chairs IIR Subcommittee

CHICAGO — James W. Cannon, senior vice-president of Safeco Corp., was named chairman of the insurance industry's Joint Standards Committee, sponsored by Acord Corp. and the Insurance Institute for Research (IIR).

Charles Siegel, assistant vice-president of U.S. Fidelity and Guarantee Companies will chair a subcommittee that was formed to work with IIR to begin implementation of a batch transmission message structure standard.

A second subcommittee, to be chaired by Ralph O. Cote, senior vice-president of Commercial Union Insurance Companies, will produce a data dictionary that the Joint Standards Committee said is necessary to proceed with further voluntary standards for industry use.

In addition, the committee decided that a staff representative from both Acord and IIR will serve on each subcommittee established. More information is available to anyone interested in attending the subcommittee meeting for batch transmission from James Ryan at IIR, 222 Mamaroneck Ave., White Plains, N.Y. 10605.

Oct. 19-23, Nov. 16-20

# Data Security Workshops Slated

DIX HILLS, N.Y. — The 40th and 41st International Operational Data Security Workshops are slated to take place in Atlantic City, N.J., on Oct. 19-23 and in Mexico City, Nov. 16-20. The workshops are sponsored by Data Security Workshops, Inc.

Twelve speakers will present their views and exchange experiences with conference attendees in the 36 sessions offered over the four and a half day event.

### Topics Covered

Topics to be discussed include credit card fraud, electronic fund transfer systems, international data flow, privacy protection, auditing and inspection and overall computer systems control.

Also addressed will be new techniques in voice and data communications, cryptographic hardware, biometric access control, risk management and backup systems.

Fee for the workshop is \$750 for the first registrant from an organization and \$700 for each additional attendee. The fee covers lunches, coffee breaks and the workbook.

Further details are available from the course registrar at Data Security, 6 Swarthmore Lane, Dix Hills, Long Island, N.Y. 11746.

# Barnett Plans Seminars On Data Management

ROCKVILLE, Md. — Barnett Data Systems is offering a series of two-day seminars on "How to Manage Data and Information as a Resource" this fall in Washington, D.C., San Francisco and Orlando, Fla.

The seminars define why information resource management is necessary, the benefits to be achieved and how to design, implement

and operate an information resource management activity, according to a Barnett spokesman.

### Three-Day Seminar

The firm is also offering a three-day seminar in the same cities entitled "How to Build and Use a Data and Information Resource Directory."

The seminars will be held in Washington, D.C., Sept. 21-25 and Nov. 16-20; in San Francisco, Oct. 26-30; and in Orlando, Fla., Dec. 7-11, a spokesman said.

The two-day version costs \$495 and the three-day seminar \$995. Barnett Data Systems is located at 19 Orchard Way N., Rockville, Md. 20854.

# Probe Looks AT Bell Plan

MORRISTOWN, N.J. — A study detailing the prospects for an AT&T fully separated subsidiary or affiliate is available from Probe Research, Inc.

Such a subsidiary may begin with nearly \$20 billion of capitalization and AT&T may be able to pump \$10 billion to \$12 billion of incremental financing into it, the report claimed.

The study also contains discussion and findings on Bell's financial strategy, its successes and competitors' reverses, major Bell competitive markets and the dangers of cross-subsidization.

The study costs \$10,000 from Probe at P.O. Box 590, Morristown, N.J. 07041.

# Datapro Adds 10 Offerings To Fall Seminar Schedule

DELRAN, N.J. — Datapro Research Corp. has added eight seminars and two one-day briefings to its educational program next fall. The firm will be offering 31 seminar topics in 11 cities during the term, which ends Dec. 18.

The new seminars range from "Structured Systems Analysis, Design and Pro-

gramming" to "Introduction to Micro/Personal Computers" for the three-day seminars, and from "Local Networks" to "Accessing and Utilizing Public Data Bases" for the one-day briefings.

The registration fee is \$595 for current Datapro subscribers and \$645 for nonsubscribers; management briefings are \$360 and \$395 from Datapro, 1805 Underwood Blvd., Delran, N.J. 08075.

# WIC Sponsors Sept. Workshop

DALLAS — The Women in Computing (WIC) group here is sponsoring a one-day seminar entitled "Strategies for Management Development" Sept. 26 at the Dallas Convention Center Marriott Hotel.

The seminar reportedly will include a survey of possible DP career paths, strategies for making the transition into management and tactics for operating successfully in the business world.

Registration fees are \$50 by Sept. 18 and \$65 after that date for WIC members. Nonmembers will be charged \$65 before Sept. 18 and \$80 afterward; student fees are \$40 before Sept. 18 and \$55 thereafter.

Reservations or further information can be obtained by contacting WIC at Suite 185, 2701-C W. 15th St., Plano, Texas 75075.

# Verve Research Schedules Security Seminar, Exhibition

ROCKVILLE, Md. — A Communications Security Seminar and Exhibition will be held in Washington, D.C., on Nov. 2-3 by Verve Research Corp. here.

Covering communications security and protection against eavesdropping, the conference reportedly is geared toward telecommunications managers, ADP systems planners and security officers.

It will address the needs of private industry, law enforcement and unclassified government. U.S. and European manufacturers will exhibit telecommunications protection terminal equipment for data, voice, record, facsimile and video.

The two-day seminar will be held at the International Inn. Further information and registration materials may be obtained by contacting William C. Grayson or Paula B. McLellan of Verve Research Corp., 51 Monroe St., 17th Fl., Rockville, Md. 20850.

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# CCP ANNUAL EXAMINATION

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The annual examination for the Certificate in Computer Programming (CCP) will be held on December 12, 1981, at selected test centers throughout the world.

Specific requirements for this year's examination are detailed in the "Certificate in Computer Programming Examination Announcement and Study Guide." The study guide and application form for the 1981 examination are available on request from ICCP.

Deadline for Filing Application is October 15, 1981

Please forward the "Certificate in Computer Programming Examination Announcement and Study Guide" along with application and test site list.

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## Calendar

Oct. 1, Winston-Salem, N.C. — **Data Base Seminar for Managers.** Contact: Rosalie Cope, Cullinane Database Systems, Inc., 400 Blue Hill Drive, Westwood, Mass. 02090.

Oct. 1-2, Charlotte, N.C. — **Southern Computer Measurement Group Fall Meeting.** Contact: Sidney Finest, First National Bank of Atlanta, Box 4148, MC 2331, Atlanta, Ga. 30302.

Oct. 5-9, New York — **CICS/VS Command-Level Applications Programming.** Contact: I. Zelin, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036. Also being held Oct. 12-16 in Piscataway, N.Y.; Oct. 19-23 in New York; Oct. 19-23 in Dallas; and Oct. 26-30 in Piscataway, N.Y.

Oct. 5-9, Piscataway, N.Y. — **CICS/VS Macro-Level Applications Programming.** Contact: I. Zelin, Comped, 1133 Ave. of the Americas,

New York, N.Y. 10036.

Oct. 12-16, Atlanta — **MVS-SP Internal Logic, System Design and Performance.** Contact: Computer Systems Research, Inc., 195 W. Main St., Avon, Conn. 06001.

Oct. 12-16, Minneapolis — **DMS II.** Contact: Woody Boyd, Lawson Associates, Suite 390, 2021 E. Hennepin Ave., Minneapolis, Minn. 55413.

Oct. 13-14, Toronto — **Software Project Management: A Systematic Approach.** Contact: Digital Equipment Corp., Educational Services, Seminar Programs, 12 Crosby Drive, BU/E58, Bedford, Mass. 01730.

Oct. 13-14, New York — **How to Select Computer Terminals.** Contact: CRC Systems, Inc., Professional Development Division, 4020 Williams-

burg Center, Fairfax, Va. 22032.

Oct. 13-15, San Jose, Calif. — **Word Processing & Office/Business Equipment Trade Show & Conference.** Contact: WPOE Show Management, Carlidge & Associates, Inc., Suite 1014, 491 Macara Ave., Sunnyvale, Calif. 94086.

Oct. 13-15, Wellesley, Mass. — **Human Factors in Office Automation.** Contact: Priscilla Goudreaux, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Oct. 13-15, New York — **Information Management Conference for World Companies.** Contact: Clapp & Poliak, Inc., 245 Park Ave., New York, N.Y. 10167.

Oct. 13-16, New York — **Distribut-**

**ed Data Processing.** Contact: Performance Development Corp., 1101 State Road, Building N, Princeton, N.J. 08540.

Oct. 13-16, New York — **DMS/CICS/VS Design & Programming.** Contact: I. Zelin, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036. Also being held Oct. 19-22 in Piscataway, N.Y.

Oct. 14-15, Raleigh, N.C. — **Effective Presentations.** Contact: Priscilla Goudreaux, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Oct. 14-15, Orlando, Fla. — **Micro DBMS Demonstrations.** Contact: Fred Maryanski, ML 3-4/T50, Digital Equipment Corp., 146 Main St., Maynard, Mass. 01754.

Oct. 14-15, Williamsburg, Va. — **Developing Better Computer-Based Learning Projects.** Contact: George Washington University, Division of Continuing Education and Summer Sessions, Professional Development/Tidewater Center, 2019 Cunningham Drive, Hampton, Va. 23666.

Oct. 14-16, Wellesley, Mass. — **Computer Control and Audit.** Contact: Priscilla Goudreaux, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Oct. 14-16, Teaneck, N.J. — **Data Analysis.** Contact: Priscilla Goudreaux, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Oct. 14-16, Philadelphia — **Financial Analysis Workshop for Data Processing Professionals.** Contact: Priscilla Goudreaux, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Oct. 14-16, Denver — **Project Leadership Workshop.** Contact: BSI, 4720 Montgomery Lane, Bethesda, Md. 20814.

Oct. 14-16, San Francisco — **Effective Data Systems Development.** Contact: Arnold Barnett, Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

Oct. 14-16, Andover, Mass. — **Structured Testing.** Contact: University of Lowell, Continuing Education, One University Ave., Lowell, Mass. 01854.

Oct. 15, College Park, Md. — **Developing Correct Programs.** Contact: Arthur Messenger, Association for Computing Machinery, P.O. Box 39110, Washington, D.C. 20016.

Oct. 15-16, Chicago — **In-House Consulting Skills for Systems Analysts.** Contact: New York University, School of Continuing Education, Seminar Division, 326 Shimkin Hall, N.Y. 10003.

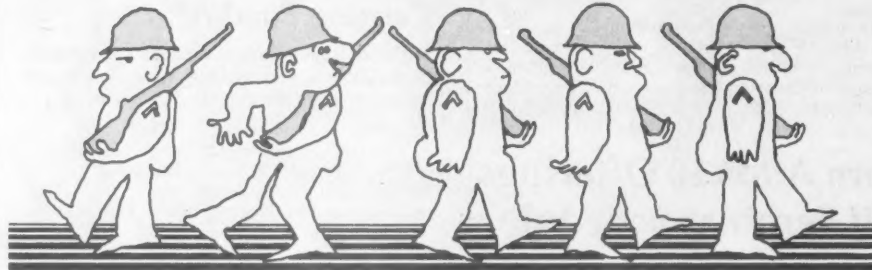
Oct. 15-16, Arlington, Texas — **User's Role in Systems Development.** Contact: Priscilla Goudreaux, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Oct. 15-16, New York — **Home of the Future Segmentation Strategies.** Contact: The Yankee Group, P.O. Box 43, Harvard Square, Cambridge, Mass. 02138. Also being held Oct. 20-21 in Palo Alto, Calif.

Oct. 15-16, Washington, D.C. — **Computer Software: A Pragmatic Approach.** Contact: Daniel T. Brooks, 6106 Lorcom Center, Springfield, Va. 22152.

Oct. 15-16, Houston — **Mainstream-EKS/VSP Fortran Conversion, CDC to Cray.** Contact: Boeing Computer Co., Suite 1040, 2900 N.

## IBM & THE INDUSTRY ABOUT-FACE New DP Strategies March On!



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- from single to multiple processors per user

These latest objectives have caused an industry turnaround! Therefore, **DP strategies must be adjusted on all levels.** Like the changing of the guard, new technologies require new implementation techniques from the top of the company hierarchy to the bottom.

With this in mind, TTI's new "IBM and Your DP Strategy" seminar introduces both management and system users to the latest DP strategies. This is accomplished through the unique structure of this comprehensive four-day course:

### Day 1 — Corporate Strategies: New Opportunities

Chicago — November 30  
New York — December 7

This **self-contained** one-day seminar within a seminar includes an overview, in business terminology, of the DP choices available in the 1980's. This **executive summary** will illustrate how network structures can

match all corporate management philosophies and organization schemes.

### Days 2-4 — DP Strategies: New Challenges

Chicago — December 1-3  
New York — December 8-10

These three days are designed for more technically oriented managers and systems designers. Examining IBM and other vendors, the seminar presents a working knowledge of design and strategic considerations. Highlights include:

- software development tools
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- satellite systems.

### Days 1-4 — IBM and Your DP Strategy

Chicago — November 30-December 3  
New York — December 7-10

Attend all four days to grasp business and strategic issues together with the technical details needed to implement any strategic plan.

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Loop W., Houston, Texas 77092.  
 Oct. 15-16, Raleigh, N.C. — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.  
 Oct. 15-16, New York — **Seminar III: Satellite Communications.** Contact: Telestrategies, Inc., Suite 102, 6842 Elm St., McLean, Va. 22101.  
 Oct. 15-18, Boston — **Third Annual Northeast Computer Show & Office Equipment Exposition.** Contact: National Computer Shows, 824 Boylston St., Chestnut Hill, Mass. 02167.  
 Oct. 18-20, Indianapolis — **Tenth Annual Conference: New Decade, New Directions; The Micro-Computer Revolution.** Contact: Carol Rabush, Western Maryland College, Westminster, Md. 21157.  
 Oct. 18-22, Marco Island, Fla. — **Association of Information Managers 1981 Annual Conference and Vendor Exhibition.** Contact: Association of Information Managers, Suite 2221, 111 E. Wacker Drive, Chicago, Ill. 60601.  
 Oct. 19-20, New York — **Computers in Manufacturing.** Contact: National Institute for Management Research, Department V-PR, NIMR Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.  
 Oct. 19-20, New York — **Computer Law 1981: Acquiring Computer Goods and Services.** Contact: Nancy Hinman, Practising Law Institute, 810 Seventh Ave., New York, N.Y. 10019.  
 Oct. 19-20, Dallas — **Computers in Pharmacy.** Contact: Nancy Unger, Lebharr-Friedman Center for Retailing Management, 425 Park Ave., New York, N.Y. 10022.  
 Oct. 19-20, San Francisco — **Software Quality Assurance and Verification and Validation.** Contact: EFDPMA Seminars, Department SQA, Suite 106, P.O. Box 91295, 5959 W. Century Blvd., Los Angeles, Calif. 90009. Also being held Oct. 22-23 in Las Vegas.  
 Oct. 19-20, Washington, D.C. — **Ada — The Language and Environment.** Contact: DPMAEF Seminars, Department ADA, P.O. Box 9125, Los Angeles, Calif. 90009. Also being held Oct. 26-27 in Atlanta and Oct.

# Calendar

29-30 in Boston.  
 Oct. 19-20, Washington, D.C. — **Software Project Management.** Contact: Digital Equipment Corp., Educational Services, Seminar Programs, 12 Crosby Drive, BU/E58, Bedford, Mass. 01730.  
 Oct. 19-21, Chicago — **DL/1 Applications Programming.** Contact: Data Base Management, Inc., 281 Hartford Tnpk., Vernon, Conn. 06066.  
 Oct. 19-21, Lenox, Mass. — **Development of the Automated Office: A Managerial Perspective.** Contact: Automated Office Systems Corp., 419 Boylston St., Boston, Mass. 02116.  
 Oct. 19-21, Piscataway, N.J. — **DL/1 Applications Programming.** Contact: I. Zelin, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036.

Oct. 19-21, Raleigh, N.C. — **SAS Regression & Anova Course.** Contact: SAS Institute Inc., P.O. Box 8000, Cary, N.C. 27511.  
 Oct. 19-21, Chicago — **How to Select, Implement and Manage a Telephone System.** Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.  
 Oct. 19-21, Reston, Va. — **Computer-Based Micrographic Retrieval Systems.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.  
 Oct. 19-21, New York — **Fundamentals of Management for Quality Control Supervisors.** Contact: American Management Associations, 135 W. 59th St., New York, N.Y. 10020.  
 Oct. 19-21, Chicago — **Electronic**

**Mail.** Contact: National Institute for Management Research, Department M-PR, NIMR Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.  
 Oct. 19-21, Chicago — **Effective Data Base Management.** Contact: Joe Menendez, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.  
 Oct. 19-21, Los Angeles — **Disaster Recovery Seminars: How to Develop, Test and Maintain a Plan.** Contact: EDP Security, 181 West St., Waltham, Mass. 02154.  
 Oct. 19-21, New York — **Data Analysis.** Contact: Priscilla Goudreaux, Q.E.D. Information Services, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.  
 Oct. 19-22, Atlanta — **DBMS Evaluation and Selection.** Contact: Performance Development Corporation, 1101 State Road, Building N, Princeton, N.J. 08540.

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<b>2</b>	<b>SYSTEMS NETWORK ARCHITECTURE (SNA)</b> 3 DAYS	<b>5</b>	<b>7</b>
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## EDITORIAL

### Pragmatism Before Profits

Information technology tests mankind in many ways. One way concerns impacts on giant businesses, like AT&T. Just as breakthroughs in transportation technology hurt railroads (which failed to realize they were in the business of moving people), breakthroughs in information technology could hurt AT&T if the largest American company failed to expand from the telephone market.

Clearly, AT&T has expanded into other markets in competition with manufacturers of computer equipment and software, but the telecommunications behemoth has shown it is not immune to the blunders and limitations of corporate giants. Specifically, AT&T's top management seems uncommitted to supporting modem customers in the public interest.

It is telling that Bell phone companies reportedly buy most of their high-speed voiceband modems from independent vendors rather than Bell's own Western Electric Co. However, a more important sign that AT&T's top brass neglects the realities of modem usage pertains to the process by which the carrier is shunting long-haul data traffic onto satellite links that many half-duplex modems cannot support [CW, March 23].

This situation is important because the public, while largely not conversant with data communications, depends on products and services whose distribution requires long-haul data traffic. For nearly two years, Bell has quietly warned long-haul customers that most Wats and Message Telecommunications Service (MTS) traffic will be diverted from terrestrial to satellite links, creating propagation delay and echo problems for modems equivalent to Bell's 201 and 202 half-duplex sets.

In "Dear Customer" letters, Bell has told Wats and MTS users they have until Dec. 31 to prepare for delays and echoes, which experts warn could crash systems, disrupting crucial commercial and government operations [CW, May 18]. Spokesmen for vendors that market 201- and 202-type modems in competition with Bell have asserted that Bell is manipulating the contretemps in violation of antitrust laws [CW, June 1].

But Codex Corp. President Art Carr seems more on the mark in calling the matter "a colossal blunder" on the part of AT&T top management.

After realizing its blunder, AT&T could be holding to a hastily rigged policy of making it difficult for independents to help users with the mess, as spokesmen for a few independents have claimed [CW, Sept. 7]. But the whole situation probably arose from a giant company's inability to manage a fast-changing technology.

## DATA PAST

### Five Years Ago Sept. 13, 1976

LOS ANGELES — Six people were indicted here for manipulating credit rating records kept in the nation's largest computerized credit data bank. The indictment charged the six worked with an employee of TRW Credit Data to alter the records of 16 individuals, although TRW had previously warned banks and other credit granters the records of more than 100 people may have been altered by the ring. TRW collects and disseminates credit data on about 50 million individuals to its customers.

### Ten Years Ago Sept. 8, 1971

WASHINGTON, D.C. — Users can improve the performance of IBM 360 systems by between 85% and 185% through hardware and software changes. That was the conclusion of a study on IBM 360 enhancement performed by Compaq, Inc. for the Computer Lessors Association (CLA). The majority of performance improvement would come through the development of new software for the 360 and users may have a helping hand in new systems development, the report stated.



## LETTERS

### Clumsy Cobol Examples

The interesting set of programming language reviews, "Alternatives to Cobol," in your recent *Computer Extra!* [Sept. 1] was flawed by the Cobol examples presented, which were often clumsy, nonstandard or wrong.

The algorithm by Peter van der Linden in "Ada" is an example of all three:

- The use of THEN in the Cobol IF statement is a nonstandard IBM option, to make things look a little more like PL/I, I guess.

- Since CODE is a Cobol reserved word, the use of CODE as an identifier is not permissible.

- The use of GOTO three times in the example can be replaced by one use of ELSE.

- The habit of treating the CASE as a nested IF for purposes of indentation is poor and should be replaced by the recognition of the CASE as a valid Cobol construct that happens to be implemented with some "ELSE IF's" in its middle. Strictly speaking, the Ada example of van der Linden is the restricted CASE, using constant values of a single variable. That might better be implemented in Cobol using Level-88 condition-names.

Edward G. Nilges in "PL/I" does Cobol a disservice in two ways. First, the example of "bad practice" in Fig. 1 is good fun, but would seriously mislead a non-Cobol-oriented reader. Nobody writes Cobol like that anymore (I hope).

More seriously, in Fig. 2 of his essay Nilges uses parentheses in a way guaranteed to confuse the reader who does not already know the score. The true branch and false branch do not use parentheses as he has shown them; perhaps he put < and > in his manuscript and the printer changed them. What he did not show is the difference between

Cobol and PL/I, namely, PL/I syntax requires parentheses around the condition and Cobol does not. As a user of both Cobol and PL/I on modern microcomputers under CP/M, I find the parenthesis and ";" requirements of PL/I to be major causes of annoyance errors.

Also, Nilges shows the "GO TO proc-list DEPENDING ON identifier" form of the Cobol CASE in parallel with the IF .. ELSE form of the PL/I CASE. That is a confusing parallel.

The GO TO .. DEPENDING structure is the analog of the simple ordinal CASE of Pascal. The "general" CASE is necessarily implemented in Cobol as IF .. ELSE IF ..

Harry Katzan is his usual encyclopaedic self in "Pascal," but also falls into the error of requiring parentheses around the condition in Cobol.

"PERFORM proc UNTIL condition" does not require any parentheses. (Incidentally, that statement does not require a period terminator either, since it is of the class "simple imperative." Weird, no? The Cobol standards committees have fallen into a trap with the old concepts "simple imperative" and "conditional," which should have been called "simple" and "compound"; so the confusion mounts.)

Perhaps the most grievous error is in Jacqueline Stewart's essay on "Basic."

In the unnumbered figure titled "Comparative Implementation ...", the Cobol example of an array is totally illegal.

One cannot define an array in Cobol entirely on Level 01. The OCCURS clause must be defined with respect to an element of the array, not the array itself; hence the OCCURS must be on Level 02 or 04 or whatever, not 01.

(Continued on Page 48)

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## READER COMMENTARY/Walter Murphy

# Cultivating New Development Ground

At times it seems that the DP industry has been defined by abbreviations and acronyms. Obvious examples include International Business Machines (IBM), Job Control Language (JCL) and Cathode Ray Tube (CRT). Even when an offshoot of the tree of DP is planted, the roots are obscured by the blossoming of a new language. Consider word processing.

Word processing is basically enhanced typing capability. Granted, word processing performs functions previously handled laboriously, but the basic task — typing — has been renamed word processing. Associated tasks have also been duly renamed. For instance: When a word processing operator (typist) keys in or enters a document (letter, report, memo), if the document requires text editing (correcting or retyping), this is performed at the operator's workstation (desk) via the CRT (literally Cathode Ray Tube; however, it must be assumed that there are no TVs in the area). Without the parenthetical explanations, the whole process smacks of hi-tech slang.

Although word processing is a good example of how a new industry develops terms to replace old associations with manual operations, I have noticed one industry in which a good deal of the business processes (tasks) are still performed manually. Therefore, I submit for development by any enterprising innovator concerned with "state-of-the-art" prod-

uct placement — the Agrarian Management System (AMS).

Farming has long been considered a fairly simple yet tedious occupation that requires long hours and strenuous work. This need not be the case. With the AMS, the dairy/produce (DP) manager (farmer) can run his agrarian production area (farm) while sitting behind a CRT and monitoring operations from his porch.

## Streamlining Operations

Consider just these areas in which the AMS streamlines operations, saving time, money and human energy exertion (work).

The embryonic unit generation center (chicken coop) is equipped with on-line pressure plates beneath each production unit station (chicken and nest). When an item (an egg) is dropped, the item is counted, weighed and classified (jumbo, Grade A). This is a particularly effective method of inventorying items that are in stock or damaged. Also, production per unit station (chicken and nest) enables the DP manager to track increases and decreases in production and productivity. This last factor, decrease in productivity per unit station, facilitates other operations, particularly in this case, the DP manager's meals.

Land insemination (planting) almost completely eliminates the need for the DP manager to don a green and yellow CAT hat and ride around

on a noisy husbandry recycling device (tractor). One space (an acre) is dissected into 124 sectors (fields) with each containing 269 "P" units (plants). Magnetic field strips are installed along each file integer and sector.

The husbandry recycling device is programmed to follow the magnetic strips. Depending on the chore designation (harvest, planting, weeding), all operations are initiated and implemented from the DP manager's control center (farmhouse). Irrigation is performed via timed release valves installed in each sector. All alpha units (corn), w(heat) and p(atoes) are placed in production automatically, as designated by the DP manager's data forecast manual (*The Farmer's Almanac*). The only operator intervention necessary in this phase of operations is if a resident mammal (a cow, horse, pig or goat) violates territorial segregation (gets loose) in one of the sectors.

Another production, the milk production unit (cow), is herded by a resident mammal coordinator (dog) into the product retrieval and foodstuffs storage center (the barn), where it is placed in individual retrieval stations (stalls). Once in place, volume units (milk) are automatically removed from the production unit and routed through the purification process (pasteurization). During this phase, individual inventorying occurs and, similar to the unit station in

the embryonic unit generation center, production and productivity are monitored.

When this phase is complete, the milk production unit is then herded to the nutritional regeneration and fertilizer capture space (pasture). There, the unit (cow) passes the time until the resident mammal coordinator is directed to return the units to the product retrieval and foodstuffs storage center. An organic sensor/collector is then programmed to scan the space.

## End of Long Day

For the DP manager, it is the end of a long day monitoring operations from the control center. If all this seems simple, consider the constant tracking the DP manager performs during the day. On the CRT at the farm price index, foreign exchange ratios, the Dow Jones and *Family Feud* are all displayed to help the DP manager remain one of the most well-informed and contemporary of independent businessmen. However, being a DP manager still requires long hours, and the evening is a time for relaxation in front of the home entertainment center (TV), for tomorrow, bright and early, the sunrise recognition device (rooster) will detonate (crow) at the start of another day in this brave rural world (west of Jersey).

*Murphy is a consultant specializing in the technical writing field.*

## THE TAYLOR REPORT/Alan Taylor

# Mixing Micros and Mainframes

Now that IBM has blessed the home computer with its own entry into that field, the software implications of these systems must be addressed. After all, software is, by all accounts, both the most expensive item to create and, particularly with regard to standards like Cobol, the hardest to change.

In the past, the software systems — Cobols, Fortrans and generators of various types — of the large mainframes have been kept apart from those of small microcomputers. Each type of system provided all that was needed for its own work. While it was possible to use both types of computers in developing software, that seldom was done.

In addition, people on either side of the mainframe micro divide seemed to know only the drawbacks, and not the virtues, of the "opposition's" gear. Few people tried to add the capabilities of both systems to create an effective and responsive way of managing software. Thus, now, although we have the IBM-blessed possible combination, we still need a software philosophy joining them.

Perhaps the most user-attractive approach that mainframes will want to take advantage of is to allow a user to see and use his first ideas as to what he wants and to improve them by using them rather than by formally specifying them in final detail first.

Mumps, Forth and other languages have shown that it is possible for people with limited knowledge to develop programs for microcomputers successfully and quickly.

Moreover, these run-while-writing development systems have shown

*'Mumps, Forth and other languages have shown that it is possible for people with limited knowledge to develop programs for microcomputers successfully and quickly. Moreover, these run-while-writing development systems have shown that much development can be done by this immediate testing, faster and cheaper than by trying to foresee (through specialists) all the possibilities in advance, document them and have to try to follow the documents. Ambiguities and delays to programming often ensue.'*

What much development can be done by this immediate testing, faster and cheaper than by trying to foresee (through specialists) all the possibilities in advance, document them and have to try to follow the documents. Ambiguities and delays to programming often ensue.

With such a development-as-specification generator technique, software development for the minis and micros involved has certainly become greatly simplified. Software has also been made cheaper. The technique has not, however, become so good that it can be immediately adopted as the optimum system, and currently there are two very serious

downfalls. One of these could perhaps have been easily foreseen, but the other I think comes as something of a surprise.

The foreseeable problem was that of documentation, here surfacing in yet another new guise. As the speci-

so their satisfaction is really irrelevant to the issue of program development techniques.

The other, perhaps unforeseen, situation arose because as the cost of producing software was reduced, the number of internal staff people necessarily involved day in and day out stayed low.

I have seen this past year a number of computer installations, which beyond hiring more-or-less adequate software specialists on a consulting basis for a half day per-month or so, are practically professionally unmanned. Yet they seem to be turning out perfectly good work.

## Little Influence

This apparent advantage of providing cheap software, however, has also resulted in a lack of technical influence on behalf of the software people in the corporate management. Normally the influence of different groups within a corporation is more or less directly based upon the size of their internal empire or on the obvious degree of danger in their area. Cheap, safe software just isn't influential. Since the software systems on the minis and micros can produce results without a strong ongoing internal programmer software base, software people lack internal power.

(Continued on Page 50)

(Continued from Page 46)

Here is the corrected example:  
01 A-VECTOR.

03 AV-ITEM PIC 9 OCCURS 5 TIMES.

Now each item of the array A-VECTOR is referred to as AV-ITEM (occurrence-nr). Note that the subscript, the "occurrence number" in Cobol jargon, must be used in connection with the item-name, not the name of the entire vector.

Because of the enriched vector definition of Cobol, the setting of the vector elements all to one can be done very simply, without need for a loop, by using the following simple PROCEDURE DIVISION statement: MOVE ALL "1" TO A-VECTOR

Of course, Stewart was using non-standard Cobol, as she mentioned. Her in-line PERFORM construct will probably be standard in a few years, since it is in the current proposal for the 1980's standard.

In summary, each of the four essays

had Cobol errors. In two of the essays, the errors were serious. Why? The answer is connected with the problem of productivity, I believe.

Too much Cobol is written by those who only know it superficially or casually. Cobol is a big lumpy language, a true camel — a horse designed by a committee (so the old joke says). Good Cobol only rarely can be written by those who do not use it regularly and in a structured way.

Howard E. Tompkins  
Professor of Computer Science

Indiana University of Pennsylvania  
Indiana, Pa.

## LETTERS

### SELECT Available

The presentation by Edward G. Nilges on PL/I as an alternative to Cobol *Computerworld Extra!* [Sept. 1] highlighted the major reason why I heartily recommend the use of PL/I: It totally supports the structured programming constructs, greatly increasing programmer productivity.

However, Nilges is mistaken when he states that PL/I is missing the CASE statement. The SELECT statement is available with IBM's PL/I optimizing compiler and looks very much like the Ada example on page 99.

In the IBM arena, the Checkout Compiler gives the PL/I program-

mer a fully interactive aid that should be cited to those who feel (justifiably) that programmers could do more if they had the right tools.

Bruce Thomas  
Manager, Programming  
MISD-Systems Development  
Coca Cola Co.  
Atlanta, Ga.

### Same Mistake

I enjoyed reading your *Computerworld Extra!* on systems productivity, but I noted a mistake in Edward G. Nilges' article in "Alternatives to Cobol: PL/I" [Sept. 1].

Nilges stated that PL/I lacks a CASE statement and substituted IF-THEN-ELSE structures. PL/I implements the CASE structure via the SELECT statement. For example:

```
SELECT (TRAN-CODE);
  WHEN ('A') CALL ADD-ROUTINE;
  WHEN ('C') CALL CHANGE-ROUTINE;
  WHEN ('D') CALL DELETE-ROUTINE;
  OTHERWISE CALL BAD-TRAN-ROUTINE;
```

The data names and the CALL statements can be replaced by almost any PL/I statement. However, CALLS normally best serve the dictates of structured coding. Another useful form of the CASE structure in PL/I is:

```
SELECT;
  WHEN (BAL < 0) CALL NEG-BAL-ROUTINE;
  WHEN (BAL = 0) CALL ZERO-BAL-ROUTINE;
  WHEN (BAL > 0) CALL POS-BAL-ROUTINE;
```

Just for the record, PL/I allows 49 levels of nesting for the select statement, far more than any sane programmer would use.

William M. Geimer  
Consultant  
Computer Horizons Corp.  
Chicago, Ill.

### Book Mislabeled?

Having been involved with the software part of the "Eagle" project, I naturally feel that Tracy Kidder's book is mislabeled [CW, Aug. 24]. The true "Soul of a New Machine" was the combined efforts of hardware, software and other groups.

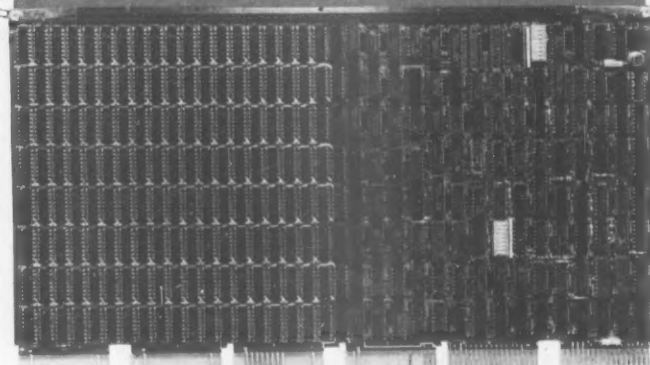
There were more than 60 full-time software project members at its peak. Approximately two-thirds of the outstanding development awards went to software people.

The software team jumped through hoops to compensate for hardware delays. A 128 terminal demonstration was produced for product announcement within four months of receipt of the first hardware in the software labs. A complete array of 32-bit software was delivered to paying customers five months after announcement.

I feel that a more balanced and useful book would have been produced if the author had spent fewer words on redundant detail.

Robert Downs  
Former Director/Software  
Data General Corp.  
Bedford, Mass.

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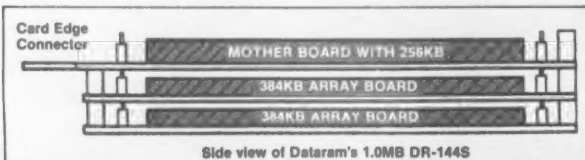
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# Mixing Micros and Mainframes

(Continued from Page 47)

Both of these problems — with documentation and with internal software power bases — seem to be tied together with any major change in the future of software. This is disturbing because it can result in inadequately prepared and provided software. But if mainframes are involved in the collaboration, this problem is greatly reduced.

## Separate File Access?

The trick, then, is to see if in the new world of collaboration between micros, minis and mainframes we can develop software technologies that take into account the known weaknesses of the mainframe software and of the potentially inade-

quately documented, inadequately represented micro software.

A technical approach toward this end was suggested to me last month by Dr. Richard F. Walters, a longtime Mumps enthusiast from the University of California at Davis. He was discussing, naturally, the use of the Mumps language on mainframes, but his thoughts have more general application.

He suggested that the mainframe's advantages are in the actual production runs. Its disadvantage is that it normally utilizes a very specialized operating system. Any hardware-dedicated software, such as the typical micro software, is simply not suitable to bridge the gap.

By contrast, the micro development

system has to perform all the operations of a complete development cycle (including development, compilation, testing and running), but does not have to do so at full economic production speed. The important connection between the two is that both must easily access all the data bases that are connected to or through the mainframe system for development purposes.

By making file access a separate

## Real Cost

The only real cost is that this idea effectively breaks our current conception of a single program, a "compiler," into yet another area with the file controller existing separately from either the development or the

module, controllable from either or both systems, there may be a way ahead that joins both types of systems, according to Walters. operational system.

The Davis approach isn't the only one, but it may permit us to start seeing where the future lies as programming not merely goes on-line, but starts using mixed mainframe and micro systems routinely for both operational and development purposes.

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## LETTERS

### Ugly Programs?

I agree with Peter Konieczko "Programming Remains an Art" [CW, July 27] that computer programming contains parts that have the appearance of art.

However, there are beautiful programs and ugly programs. One has to admit that there is something sacred about a program that works, and working sometimes has nothing to do with beauty.

The first step in a top-down approach to a building has nothing to do with the color of the building unless that is paramount. A top-down program design should start like this:

"The building is to be a single family home for two adults, two children and a dog. The house must cost less than \$100,000, must be ready for occupancy within nine months and meet zoning requirements and building codes."

With a clear statement of the primary requirements for the building, the design has a place to start. The process of top-down design is the process of elaborating details that are consistent with the previous level of detail.

Each new level introduces choices because a given requirement can be met in many ways. The art in this process is selecting the choices in a way that produces a beautiful whole.

The function requirement of the building and the cost place a set of constraints on the next step of elaboration.

However, this does not mean that there are few choices. The architect knows the kinds of houses that satisfy the use requirements as well as the current building costs.

The list of requirements for the house then defines bounds on the number of rooms. This is balanced with the cost to build each room and the result is a set of trade-offs of room size vs. number of rooms. All of these steps are rather mechanical and little "art" is involved.

The process ends when each problem is so trivial that no further reduction is necessary or a satisfactory solution is already available.

The only way to reduce the cost of software development is to stop writing software and to start reusing it.

Dr. Lynn R. Carter  
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READER COMMENTARY / John DaPonte

# Don't Overlook DP Ed in Two-Year Schools

During a recent edition of *Computerworld*, I noticed several articles describing the increasing need for data processing professionals and the lack of appropriate training available. Specifically, there was one article that outlined the failures of academia in preparing its graduates for positions in the data processing industry, "Academia Fails Test for DP Jobs" [CW, Aug. 17].

It is extremely important that a distinction be drawn between junior/community colleges and four-year colleges when leveling this type of criticism. Junior/community colleges tend to be much more "intune" with the needs of the business data processing industry than their four-year counterparts. In general, the associate's degree in data processing was designed to prepare graduates as business application programmers ready for entry-level programming positions.

### Junior Colleges Overlooked

Unfortunately, junior/community colleges are often overlooked in the debate over data processing education. Employers should recognize that in almost every community in the country a junior/community college is in existence that provides the type of training that many surveys indicate is necessary.

These public junior colleges provide a relatively inexpensive way for students to obtain some very practical skills.

Business data processing curricula emphasize study in programming languages such as Cobol, RPG-II and assembler languages, as well as the traditional academic courses such as English, mathematics and social sciences. Many of these schools also require courses in accounting, management, systems analysis and data base.

The junior/community colleges tend to provide a more comprehensive education than trade schools because they better prepare their graduates for moving up the ladder of management and they provide a more practical education than is

available in the computer science departments at many four-year colleges. The proper educational direction of the junior/community colleges combined with the availability of "state-of-the-art" computer systems for laboratory debugging sessions, under faculty supervision, make for a unique and vital educational resource that industry should not overlook in solving their staffing needs.

### Company Requirements

In many cases, companies will require a bachelor's degree for an entry-level programming position. This

seems inconsistent with many surveys being conducted, which indicate that companies are dissatisfied with the theoretical orientation of the four-year colleges. It would be advantageous for these companies to revise their entry-level requirements so that an associate's degree, rather than a bachelor's degree is required.

Data processing professionals also should recognize that their local junior/community college will often have DP advisory committees. These committees advise the data processing departments of the two-year colleges on the current orientation of the local DP industry.

Another way of impacting data processing education at the junior college-level is to investigate the possibility of teaching an evening course at a local two-year college.

It seems that many of the complaints about DP education could be satisfied if industry would better recognize the contributions of their local junior/community college and work cooperatively with these schools toward achieving mutual goals.

*DaPonte is an associate professor at Norwalk St. Technical College in Connecticut.*

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HUMAN CONNECTION/Jack Stone

## Installation of Mini Leads to Adventure

Report from Egypt: My first foray into the Middle East hinterland to install a small mini system was uneventful up to, but not including, my sortie from the Cairo airport.

As I entered the queue for baggage examination, I observed a customs official hovering near my large black, heavily sealed trunk. I was a bit nervous about his presence since the trunk contained twin M byte disks nearly overflowing with software jewels.

A few minutes later, a half-dozen black-suited, jack-booted, green-bereted soldiers surrounded me and my baggage — which was okay until I

noticed that their bayonet-rigged machine guns were pointing at certain sacrosanct segments of my anatomy. All this, I thought, for the glories of computer science.

### Stock Response

Fortunately, my many years in the business gave me the cool I needed to deal with this rather pressing situation — I merely retrieved a stock response from my repertoire of excuses for performance failures: "Hey, guys. You end users shouldn't be so unreasonable. I've told you many times that we always have problems when a new release of OS is installed."

Nobody even smiled. At first, I figured it was because my humor was so wonderfully subtle. I assumed, of course, that airport personnel would be conversant in a variety of languages — including English, but it turned out that all they knew were dialects of Arabic.

I was directed to open the trunk through hand signals. And what a flurry of excitement when I displayed a disk with its plastic cover. Everybody within eyeshot scurried for cover, which thoroughly confused me until I ascertained from my grade B movie experiences that a disk resembles a type of explosive termed

a "limpet mine."

Things returned to normal quickly after I unlatched the disk cover and pointed out the harmless platter to the disassembled multitude.

After being rapidly escorted out of the terminal, running a gauntlet of wide-eyed taxi drivers who clawed out for my beloved disks, and then searching frantically for a customer contact, a smallish dark-complexioned man stepped out of the shadows and softly asked, "Dr. Stone, I presume?" I was so thrilled that I embraced him and kissed him on both cheeks.

The next morning, I collected my disks, documentation and dysentery pills and headed over to the site. I also carried with me a slew of diskettes (the 8 in. floppy variety), which I want to discuss for a moment.

### Weird Configurations

For those readers who are not yet into small minis, let me caution you about those weird hardware configurations that provide secondary storage facilities in the form of one fixed disk and one removable, both attached to a single drive. The problem comes in disk backup and recovery: One has to perform some classy file-copy maneuvers to backup both disks, plus shut down operations during the process to exchange removable disks. Vendors offer an alternative "solution" in the form of an ancillary floppy disk capability — I merely had 27 of the little fellers backing up my systems disk. There simply has to be a better way . . .

So I embarked upon a system to load in the floppy software, which went well up to, but not including — as you might guess — the first track of the IPL disk. I tried every trick imaginable to read that disk, short of driving over to the pyramids and asking the sphinx for guidance, but I couldn't do it.

We contacted the local office of the vendor for another copy of the disk. They dropped it off with the guard, but we couldn't read it because it was password-on-read protected and nobody knew the key. While anxiously searching for a light at the end of the systems installation tunnel, I noticed a cute little red lamp at the floppy disk trap door. My site manager said it was the select light for the device, which bothered me a bit because my home-based machine didn't have one.

"What is your mainframe type number, again?" I asked. He told me and it checked out.

"And what model mainframe do you have installed?" He told me — and it didn't check out.

Well, all was not lost. I was able to use file copy utilities to copy over all of the applications software, which are the only really important modules (I keep telling myself) and will provide the necessary applications support for the site. I guess I'll have to wait for the next installation before recovering from my acute case of battered ego — at a minimum, I will most assuredly get the configuration straight.

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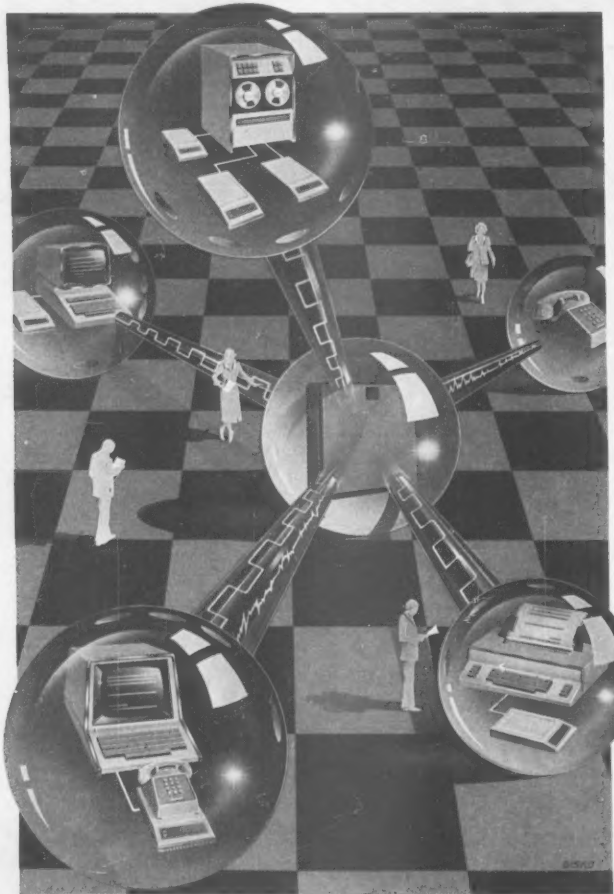
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## Analyzer From Candle Tunes IMS

By Robert Batt

CW West Coast Bureau  
MARINA DEL REY, Calif. — A degradation analyzer for use in tuning IBM's Information Management System (IMS) has been introduced by Candle Corp. The Dexan/IMS data base management system analyzer follows on the heels of Dexan/MVS and Dexan/CICS, introduced at the beginning of this year.

The aim of Dexan/IMS, a Candle spokesman said, is to enable an IMS systems programmer working on real-time IBM 370s to focus on problem transactions and determine why response time is poor.

"Anytime that a task is not utilizing a CPU, degradation analysis shows where the time is taken upon non-CPU resources such as I/O and splits it down into the percentage of time spent on that resource, for example," he said.

(Continued on Page 61)

## Package Pays for Itself User Solves JCL Problems

By Rita Shoor  
CW Staff

CHATTANOOGA, Tenn. — A new approach to a "problem that has been around since IBM began writing mainframe operating systems" is saving time and money for Provident Life and Accident Insurance Co. here.

"In short, the problem was [IBM] JCL," a Provident spokesman said. "Too much programmer time was spent locating JCL errors. And too much system time was wasted rerunning jobs that failed because of undetected JCL errors."

Provident's solution was to install JCLcheck, a software package from Santa Clara, Calif.-based Triangle Software Co. The insurance company was one of the first JCLcheck users and maintained that the software more than paid for itself within eight months of installation.

Utilizing the package that is



Provident's Peter Wyeth, systems analyst, and Nancy Fletcher, vice-president of corporate systems, are shown using JCLcheck.

designed to pinpoint JCL errors before a job is submitted to the system saves Provident up to \$750 each month, according to Systems Analyst Peter Wyeth. Detecting JCL errors such as misspelled or uncataloged data

sets and invalid programs saves about 250 abends every month, he said.

"The average wasted time per abend is 25 to 30 CPU seconds with each second worth about 10 cents with device charges," Wyeth estimated.

Incorporating JCLcheck into its standard, mandatory procedures for test-to-production turnover allows Provident technicians to isolate JCL errors before new or modified jobs are submitted to the system. "Every job that goes into a production schedule must first pass

(Continued on Page 60)

## Amdahl Says 'VM/SA' Bests 'VMA'

SUNNYVALE, Calif. — Amdahl Corp. announced a Virtual Machine/Software Assist (VM/SA) program that it claimed increases performance in VM/370 environments by improving VM/370 instruction simulation.

The vendor said VM/SA is the functional equivalent of IBM's Virtual Machine Assist (VMA) and Shadow Table Bypass Assist without the requirement for additional hardware.

Other key features of VM/SA, Release 1.0, reportedly include reduction in the number of instructions required to simulate frequently used privileged instructions; enhancement of the instruction simulation routines to take advantage of the Amdahl 470 architecture; and the use of standard VM commands.

VM/SA can run on any Amdahl 470, 580 or compatible processor and in conjunction with its VM/Performance Enhancement (VM/PE) program product.

VM/SA and VM/PE are independent of each other, the ven-

dor explained, but can be used in combination to yield a VM/370 environment. VM/PE is said to eliminate instruction simulation for MVS or SVS operating systems, and VM/SA reportedly reduces the instruc-

tion overhead for the remaining virtual machines.

VM/SA is available for the lease price of \$500/mo per processor. Amdahl can be reached at 1250 E. Arques Ave., P.O. Box 470, Sunnyvale, Calif. 94086.

## Financial Software Packages Bow

• For Variety of Processors

NEW YORK — Lloyd Bush & Associates has unveiled a series of analytical financial software products for use on processors from Prime Computer, Inc., IBM mainframes running under TSO, the Digital Equipment Corp. VAX-11, Perkin-Elmer Corp. 3200 series, the Hewlett-Packard Co. 3000 and the Sperry Univac 1100.

The Model series offers four distinct but related levels of planning software with increasing levels of sophistication from the spread sheet level upward, the vendor said. Model Level I, an interactive financial modeling and planning package, is the basis of the series. It offers basic spread sheet analysis and the "What If" function.

Data is contained in the model or entered through What If, the vendor said. Also included

(Continued on Page 58)

• For DEC Machines

SEYMOUR, Conn. — Computer Software Associates has announced Model-I, a financial modeling package written in DIBOL-11 for use under Digital Equipment Corp.'s RSTS/E and RT-11 operating systems.

Model-I reportedly provides management with a software tool for analyzing "What If" alternatives and producing spread sheets based on complex arithmetic relationships.

The package also includes a video graphics module that may stand alone or be integrated into the financial modeling system.

Model-I is said to allow the user to create and change specialized models through an interactive user-oriented maintenance routine. Within the models, the user defines the arithmetic calcu-

(Continued on Page 58)

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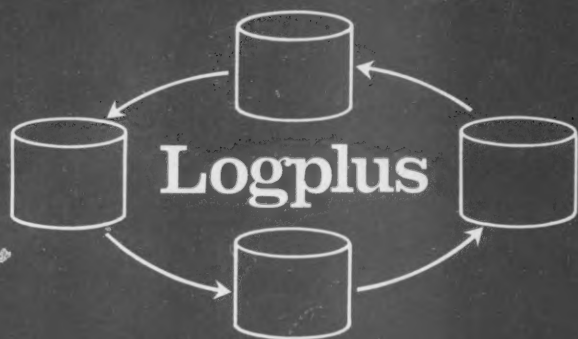
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# 'Cogen/Inquiry' Fits Big Burroughs Systems

JACKSONVILLE, Fla. — A software package designed to generate on-line inquiry programs for users of large Burroughs Corp. systems was announced by Jacksonville Software Development Corp. here.

Said to be the first of several packages comprising a Cobol Generation (Cogen) system, Cogen/Inquire accepts "simple nonprocedural specifications" describing the functions of the inquiry transactions.

Combined with Burroughs Data Management System (DMS) II data base description file, these specifications are used to generate a complete Cobol source program

and compile work flow, according to Robert Camacho, director of software development.

Programs can be generated to operate with either the Generalized Message Control System (Gemcos) or MCSII message control systems, Camacho said.

Both unique and duplicate key inquiries can be generated with Cobol/Inquire.

However, all inquiry capabilities must be defined at program generation time.

This means that the software is "not suitable" for utilization as an ad hoc inquiry/debugging tool, Camacho said.

### Time Saver

The vendor claimed that Cobol/Inquire enables entry-level programmers to develop operational on-line DMSII inquiry programs "in a small fraction of the time"

that the same task would require from an experienced technician.

This productivity increase is due to the package providing program structures for various inquiry capabilities and handling such "troublesome details" as DMSII and Gemcos interfaces.

Besides reducing initial program development cost and time, generated programs can be changed or ex-

panded via a specification change and regeneration, a spokesman explained. Custom capabilities can also "be quickly patched in if required."

Available immediately, Cogen/Inquire costs \$5,500 for a permanent license not including maintenance.

Jacksonville Software is headquartered at 2121 Corporate Square Blvd., Jacksonville, Fla. 32216.

## Dylakor Has DOS Version Of 'DYL-280'

GRANADA HILLS, Calif. — The DOS version of DYL-280, a free-form, English language report writer/extended utility/programmer aid, has been released by Dylakor, Inc. here.

Announced for OS earlier this year [CW, March 30], DYL-280 operates on IBM 360, 370, 30 series and 4300 mainframes and compatible hardware.

The package supports the firm's DYL-260 report writer/utility, its optional modules and subroutines and DYL-Audit, the vendor said.

### Standard Plan

Available immediately, the DOS version of DYL-280 will be marketed under the standard Dylakor plan, which includes a free trial period, a get-acquainted offer at a preferred rate for three months and various lease agreements, according to the vendor.

The price for a three-year lease is \$127.25/mo and the product is being offered to Dylakor's current customer base for a "small one-time-only conversion fee," the vendor said.

Dylakor is at 17418 Chatsworth St., Granada Hills, Calif. 91344.



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DC-4	Introduction to Teletyping Software	11/30-12/2	9/21-23	11/4-6	9/14-16				12/7-9	10/14-16
DC-5	Distributed Systems: Effective Approaches and Applications	12/9-11	11/4-6	9/14-16	10/21-23	12/16-18			9/23-25	
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## 'CA-View' Provides CMS Formats

JERICHO, N.Y. — Software that reportedly provides IBM VM/CMS users with a display and management facility for CMS queue files was released here by Computer Associates, Inc.

CA-View was designed to provide two screen formats. One displays active entries in a CMS user queue to permit an entry to be printed or de-

leted.

The other provides data or a queue entry, as well as edit functions, to locate character strings, forward and backward facility and left and right justification.

The software can be used with IBM VM/SP or VM/370 systems, the vendor said, and provides the ability to check reports before printing them,

the vendor said.

CA-view is available on a three-year lease license at \$2,500. Other lease plans are available from Computer Associates at 125 Jericho Tnkp., Jericho, N.Y. 11753.

## Financial Series Fits CPU Variety

(Continued from Page 55)

is net present value and internal rate of return analysis, according to Lloyd Bush & Associates.

Level II was designed for ongoing budgeting and reporting applications. It adds data file reading and writing, controlled report formatting, math and financial functions and plotting.

### Modeling Techniques

Level III offers advanced modeling techniques and consolidation and reportedly is the base on which specialized features contained in Full Implementation Model can be added individually.

The latter includes all of the Model features, including Monte Carlo simulation, linear programming, statistical library, forecasting library and simultaneous equations.

Level I is priced at \$950, Level II at \$9,500 and up, Level III at \$30,000 and up and Full Implementation Model at \$60,000 and up, according to a spokesman.

Lloyd Bush & Associates is located at One Battery Park Plaza, New York, N.Y. 10004.

## 'Model-1' Runs On DEC Units

(Continued from Page 55)

lations, conditional logic and row and column manipulations that are to be performed on specific data sets, the vendor said.

### Print Specifications

Also defined within the model are the print specifications for the report, which is produced when the model is processed, the vendor explained.

Print control options include titles, column headers, text printing, new page control, skip lines control, underlining and double underlining, the vendor said.

Data to be processed by the models is stored in data pools maintained by the user through interactive file maintenance routines, according to a spokesman.

System data manipulations features reportedly include updating data pools based on information produced during model processing, sharing data between models, storing multiple sets of data for one model and defining models so specific data must be input through a CRT terminal as models are processed.

The Model-1 package, complete with graphics kit, is available for \$2,900 from Computer Software Associates at 15-89 Balance Rock Road, Seymour, Conn. 06483.

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## Accent R on Time-Sharing

FAIRFIELD, N.J. — An interactive, relational data management system designed for use by programmers and nonprogrammers is now available on Rapidata's time-sharing network.

Accent R, developed by National Information Systems, Inc., provides storage, retrieval, manipulation and reporting of business data. It is an interactive system combining a nonprocedural language, applications language, query facility and a data base management system.

Charges for Accent R are tied to computer connect and processing time.

Rapidata is headquartered at 20 New Dutch Lane, Fairfield, N.J. 07006.

## Company Solves JCL Problems

(Continued from Page 55) through JCLcheck." Nancy Fletcher, vice-president of corporate systems, maintained.

The firm effectively operates as five different companies, each organized as a department, according to Fletcher.

A single DP operations environment that includes a global 12M-byte IBM 3033 and a local 6M-byte Model 168 running under MVS/

JES3 serves all departments. However, "each department ... is supported by its own programming team ... has its own vice-president and functions like a separate business."

### No Room for Errors

Given the volume of work produced by the organization's approximately 100 programmers, "there is no room for errors in the various ways JCL is handled," a spokes-

man continued.

He placed equal importance on programmer productivity. "Provident's management does not view paging through JCL listings to find errors as productive work," according to the spokesman.

While the programmers code their own JCL, each department has a DP assistant who examines all new and changed JCL and uses JCLcheck's reports to locate and correct errors, Fletcher explained.

After eliminating these errors, the assistant files the product's jobstream JCL report for documentation.

These filed reports are valuable when a new programmer assumes responsibility for a job, Fletcher said.

### Time Saver

The data set cross reference, for example, saves time when the programmer is modifying the JCL stream or when he is trying to determine how a specific job is using a data set.

JCLcheck may also have cut down on midnight calls for Provident programmers. "A production job might be running for two hours before we found out that a required program was not cataloged in a specified library," she noted.

"Since we run our production jobs late at night, the programmer had to come back after the batch run to re-set up the job and submit it again. JCLcheck catches this type of problem before a job is submitted," according to Fletcher.

### Initial Testing

The utility package is also valuable during initial testing. Programmers working in an IBM Time-Sharing Option environment would wait up to three hours for JCL listings that contained errors.

Putting JCLcheck on-line allowed the technicians to immediately spot "a host of errors," according to Fletcher.

And "eliminating JCL errors before running greatly reduces the number of runs required," Fletcher explained.

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## CICS Transaction Support Added to 'Dumpmaster'

MT. FREEDOM, N.J. — Macro4, Inc. has added support for CICS transactions to Dumpmaster, its alternative to IBM's DOS/VS and DOS/VSE dump routines.

The software now handles bothabend and snapshot dumps of CICS transactions and provides full on-line and batch printing facilities as well as facilities specifically developed for CICS transaction dumps, Macro4 said.

Keywords and notes are included to allow on-line access to any part of a transaction and its associated storage areas, according to a spokesman.

Displays are tailored according to the programming language used and the CICS trace table entries for the failing transaction are selected and displayed in reverse chronological sequence, he added.

Batch printing of dumps can be selected by dump number; terminal-, operator- or transaction identification; or the user can opt to request all dumps for a CICS session.

In addition to the CICS storage areas and the trace table entries for the

transaction, the batch printouts also include an image of the CRT terminal screen at the time of the failure, the vendor said.

The new release also enhances the Dumpmaster on-line storage display facility to include keywords for all significant CICS internal control blocks and storage areas, according to the vendor.

This allows a systems programmer to inspect any of these areas plus any transactions while CICS is running, the spokesman explained.

Available immediately, the CICS transactions support option costs \$75/mo from Macro4 at One W. Hanover Ave., Mt. Freedom, N.J. 07970.

## SQL Language Extended To Support Functions for Oracle

MENLO PARK, Calif. — Relational Software, Inc. (RSI) has provided extensions to the SQL language to support bill-of-material functions for Oracle, its relational data base management system (DBMS).

Some current Oracle users are involved in developing manufacturing planning applications that require implosion and explosion bill-of-material functions, according to the vendor.

These functions allow for processing product structure lists in the form of "tree-structured" relationships. A Parts list and product structure table are integral parts of the data base and can be linked with other appropriate data, according to the

vendor. In its SQL implementation, RSI provided extensions in the form of Oracle Kernel operations rather than as a layer of application software on top of the DBMS to allow users to directly develop their manufacturing application software, according to a spokesman.

This means the new functions are available to the product's query facility, interactive application facility and report writer as well as to host language programs calling Oracle, he explained.

The SQL extensions are available at no charge to Oracle users. The DBMS costs \$48,000 from RSI at 3000 Sand Hill Road, Menlo Park, Calif. 94025.

## IBM Users Get 'Dexan/IMS'

(Continued from Page 55)

ample, as with queuing for the use of the disk or channel," the spokesman said.

By breaking up response time into their component parts, parameters can be adjusted to prevent wasted time. "Until now we have been used to tuning the resource. Degradation analysis is aimed at tuning the workload instead. It challenges traditional ways of tuning resources by, for example, getting away totally from IBM's rules of thumb," the spokesman added.

The aim of Dexan/IMS is to indicate where a task spends most of its time and where tuning could be most useful. Given the proliferation of MVS users throughout the world, the spokesman argued there are not enough performance analysts to do the required software tuning by traditional methods.

"Typically, IBM is adding more code and increasing the performance capability of MVS so that it is getting more complex. For instance, the latest release of MVS/system product [SP] has more than 80 new parameters that performance analysis may have to adjust," he said.

The only immediate solution, he said, is to increase the productivity of existing performance analysts.

Dexan/IMS will be available to users in the second quarter of 1982. It will cost around \$16,000 and was designed to support IMS Release 1.1.6.

The price of the other Dexan products, currently costing \$12,500, will be raised soon as part of a company price-hike policy. The MVS and CICS systems support MVS releases of system extension (SE) 1, SE2, SP1 and SP2.

Candle is located at Suite 401, 4676 Admiralty Way, Marina Del Rey, Calif. 90291.

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## 'Catalist' Helps NCR Users Control VRX Job Strings

CINCINNATI — Software Clearing House released a management tool called Catalist for NCR Corp. VRX users that reportedly helps operations managers handle expanding job populations by controlling the usage and deletion of VRX job strings.

Catalist is said to pool data from multiple disk packs and card decks to provide management with a cross-reference of all programs and job strings and a data dictionary that can be accessed through On-Line Programming Development.

Reports analyze job strings from various points of view and include critical job parameters such as Job

specifications and Nextdo statements.

Catalist reportedly provides for mass deletion of job strings either by generic keys or through the use of "temporary job" naming conventions.

The package provides the following reports: Job Recap, Nextdo Recap, Job Deletion Review, Runtime Patch Report, Unit Utilization Report, Keyword Recap, List of All Catalog Jobs and Disk Analysis Report.

The perpetual license fee for Catalist is \$1,275 until Oct. 1, after which the price will be \$1,475 from Software Clearing House, 771 Neeb Road, Cincinnati, Ohio 45238.

## NCR Generator Updated

CINCINNATI — Software Clearing House is offering a new release of UPG, its shorthand language utility program generator for NCR Corp. systems.

New UPGSPUR utilities allow changes to be made to UPG programs on disk without destroying the original programs, according to the vendor. A new AGE command computes the difference between two dates, the vendor said.

Other enhancements include cross-reference and renumbering utilities to make coding easier, the firm said.

As of Sept. 15, UPG's price will increase from \$2,475 to \$2,975. Software Clearing House is at 771 Neeb Road, Cincinnati, Ohio 45238.

## 'Minito' Aids Transaction Processing

BLUE BELL, Pa. — Sperry Univac has added an entry-level transaction processing system to its V77 line of general-purpose minicomputer software.

Minito will support up to four UTS-10 buffered CRT terminals. It operates with a V77 64K-byte mini and utilizes a 10M-byte cartridge disk drive with controller and a 200 char./sec printer.

Minito provides both a transaction processing format in which a maximum of four CRT terminals may simultaneously operate and a background environment for the serial execution of programs when the system is not in transaction mode.

The V77 Vortex I operating system, Pronto transaction monitor, a utility package and a file editor complete the product offering.

Available immediately, the system is licensed for \$2,000. Sperry Univac can be reached through P. O. Box 500, Blue Bell, Pa. 19424.

## 'Explain' Out For DP Writers

MINNEAPOLIS — Communication Sciences, Inc. has introduced Explain, a 30-module writing and documentation methodology in ring-bound guides designed as a reference library for writers of business and DP documentation.

Explain is available in five packages, each designed for different stages of a company's development, the vendor explained. It reportedly provides the standards, tools and procedures for developing and controlling all types of business documentation.

The complete Explain package is priced at \$16,500. The basic package, which includes everything but DP documentation, costs \$9,500.

Datex M, a set that includes DP documentation designed for small or new users, is priced at \$3,500. Datex, a DP documentation package for more sophisticated users, costs \$7,500. Graphex, which consists of charting tools and techniques, is available for \$650. Communication Sciences, Inc. is headquartered at Suite 810, 730 Hennepin Ave. S., Minneapolis, Minn. 55403.

## Gejac Enhances 'Arsap' System

RIVERDALE, Md. — Version III of Gejac, Inc.'s computer management and resource system Arsap offers a variety of histogram reports that describe how resources are being used.

The software, which was designed for Digital Equipment Corp. PDP-11 computers, performs shift accounting that allows for time-of-day charging and more than 99 report formats to provide custom information. Arsap Version III is compatible with RSX11M and RSX11M-Plus operating systems. The RSX11M module costs \$2,995 and the RSX11M-Plus module \$3,495. Gejac can be reached through from P.O. Box 188, Riverdale, Md. 20737.



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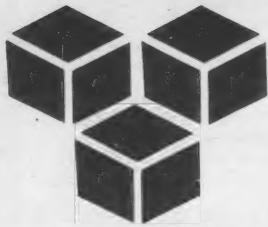
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# And Productivity Aid Bows Updated 'Cims' Supports DOS/VSE

WALNUT CREEK, Calif. — In a double announcement, BMS Computer, Inc. introduced a new version of its IBM-compatible Computer Installation Management System (Cims) and a productivity aid for Co-

bol and assembler programmers.

The latest Cims release supports 12 partitions in a DOS/VSE environment and all IBM 370, 30 series and 4300 operating systems including CMS and CICS, according to a BMS spokesman. The system operates without modification macros, is device-independent and "can be installed in less than 10 minutes," he claimed.

All required installation instructions and sample job control to create up to 20 predefined reports are delivered with the product.

Maintaining that its Exception Condition, Abend Prevention Subroutine (Ecaps) will "drastically reduce

testing and debugging costs" for Cobol and assembler programs, he explained that the package prints a diagnostics message and allows the program to keep executing when a program check is encountered.

Ecaps handles all types of program checks and is especially useful for data exceptions, addressing exceptions, operation exceptions and decimal divide exceptions, BGS said.

Both products are available for a 30-day trial and evaluation period. Cims is priced at \$5,000 for DOS and \$6,500 for OS environments and Ecaps sells for \$750. BGS is at Suite 102, 150 N. Wiget Lane, P.O. Box 3086, Walnut Creek, Calif. 94598.

## CAD Software Features 3-D Design

PALO ALTO, Calif. — Computer-aided design (CAD) software that reportedly features three-dimensional design capabilities has been announced for the automotive, aerospace, industrial and general mechanical industries by Marc Software International, Inc.

ITS-10 will run on 32-bit minicomputers manufactured by Prime Computer, Inc., Digital Equipment Corp. and IBM and interfaces with the company's other analysis software, the vendor said.

The ITS-10 geometrically describes objects or models by areas, volumes, holes and voids combined into true 3-D object representatives, the company claimed.

ITS-10 leases for \$2,750/mo or can be purchased for \$87,500 from Marc Software International, Inc., Suite 810, 525 University Ave., Palo Alto, Calif. 94301.

## T/S Calculates Nutrient Levels

MINNEAPOLIS — The Nutrition Analysis System, a service offered via time-sharing by which food manufacturers, newspaper food editors, restaurants, schools and other institutions can calculate the amount of each nutrient in recipes, has been developed here by Honeywell, Inc.

Subscribers are charged \$3 per recipe processed by the Nutrition Analysis System; there is a \$100/mo minimum charge. Recipes to be analyzed are transmitted via terminals to Honeywell's Datanetwork computer, which processes them based on data from the U.S. Department of Agriculture.

Further information on the service is available from Honeywell Datanetwork at Honeywell Plaza, Minneapolis, Minn. 55408.

## Prices, Rental Hiked For Rabbit-1 and 2

WEST PALM BEACH, Fla. — Raxco, Inc. has announced price hikes for its Rabbit-1 and 2 software for the Digital Equipment Corp. VAX-11/780 processors and new rental plans for all software products as of Oct. 1.

The price of Rabbit-1 and 2 resource accounting and performance analysis systems has increased from \$2,495 and options at \$250 to \$3,495 with options at \$350. One-, two- and three-year rental plans will be available from \$99/mo.

More information is available from Raxco, Inc., 3336 N. Flager Dr., West Palm Beach, Fla. 33407.

## Financial Tool Fits TI DS990

MINNEAPOLIS — Open Systems, Inc. is offering the Software Fitness Program financial applications package on the full line of Texas Instruments, Inc. Model DS990 computers.

Designed for first-time users, the package includes seven sales, accounting and business applications. Features include last-in/first-out, first-in/first-out and average cost methods of inventory evaluation, financial statement report generator and on-line interactivity between all applications.

The applications cost \$750 each from the firm at Suite 409, 430 Oak Grove, Minneapolis, Minn. 55403.

See us at the SOFTWARE INFO 81 Chicago September 15th-17th Booths A08-410

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# Data Entry Improved in 'Prompt'

SHELBYVILLE, Ky. — Mid-American Control Corp. released Version 8 of its Prompt data base facilities for IBM Series/1 minicomputers running under Version 3 of the EDX operating system. Enhancements reportedly include improved data entry features, increased capabilities in processing facilities and faster execution plus six new modules.

The data entry features reflect the biggest changes to

Prompt. These reportedly include increased interactive capabilities, duplicate record checking, the use of full screen for data entry and for users to respond to error messages, automatic voiding capabilities that relieve users from responses to certain error conditions, and user control of error conditions that have "value not found," a spokesman said.

Other enhancements include increased execution

time in heavily used programs such as transaction processor, file conversion and sorting and merging.

The six new modules are amend specification, amend editing, file conversion specification, conversion editing, transaction processor editing facilities and a new parameter file manager.

Prompt is priced at \$6,000 from Mid-American at P.O. Box 57, U.S. 60 W., Shelbyville, Ky. 40065.

# Series/1 Cable TV Users Gain Management Package

HARRISON, Ark. — Computer Utilities of the Ozarks, Inc. announced Cable/1, a management information package designed specifically for cable television companies utilizing the IBM Series/1 minicomputer under the EDX 3.0 operating system.

The integral part of the software reportedly is Prompt, a set of system de-

velopment tools marketed by Mid-American of Shelbyville, Ky., that utilizes the data base concept.

Cable/1 reportedly includes accounts receiving and billing; work-order generation, processing and scheduling; payment and work-order history; and inquiries by account number, last name, street information or an eight-digit location code.

The software package costs \$15,000. The vendor can be reached through P.O. Box 1062, Highway 65 S., Rt. 2, Harrison, Ark. 72601.

# 'Solar' Tailored To Reinsurers On IBM, Wang

OVERLAND PARK, Kan. — Software for reinsurance documentation, statistics, technical and market information, developed by Cross Computer Group Ltd. of Britain, is available through Reinsurance Intermediary Corp. (RIC) here.

The System for On-Line Treaty Administration in Reinsurance (Solar) is said to provide a complete processing service without major capital expenditure, tailored to the needs of any size reinsurance company.

Solar is operative on Wang Laboratories, Inc. VS, VS100 processors as well as IBM 370, 4300, 30 series processors with Vsam, CICS and Cobol, according to a vendor spokesman.

License fee is \$120,000 plus 10% annually; installation, implementation, training and support are additional. Documentation is included, the vendor said.

RIC is located at 10019 W. 101st St., Overland Park, Kan. 66212.

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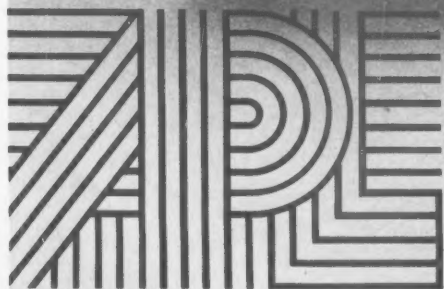
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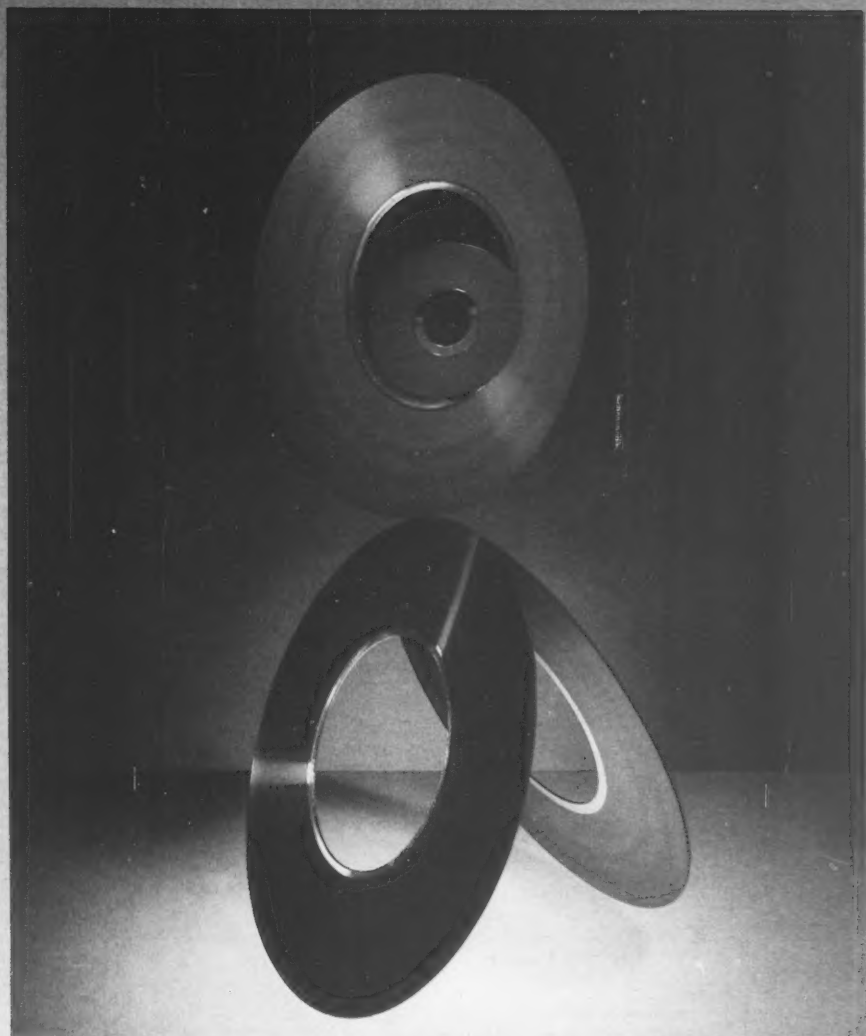
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## Fortran Compiler Offered For PE Reliance System

OCEANPORT, N.J. — A Fortran VII compiler for use with its Reliance transaction processing system was unveiled here by The Perkin-Elmer Corp.

This reportedly will enable users to write Reliance programs in both Ansi standard Cobol or Fortran. The new Fortran interface also is said to provide software routines and documentation that allow the programmer to implement a transaction processing system on PE's 32-bit Megamini computers, including Models 3220, 3230 and 3240.

Reliance is an integrated system, the vendor said, which controls and monitors application programs and

libraries while providing application development facilities to the system builder.

The basic Reliance package, which is priced at \$8,400 and is fully licensed, contains the transaction controller ITC and the data management system DMS/32. The user also licenses the appropriate language package.

Fortran VII for Reliance is licensed at \$7,300 and Cobol for Reliance is priced at \$5,300. All packages are available immediately and prices include training credits, installation and maintenance for one year.

Perkin-Elmer is located at 2 Crescent Place, Oceanport, N.J. 07757.

## 'Xpediter' Gets Test Support

SAN JOSE, Calif. — Application Development Systems, Inc. has unveiled support said to allow users of its Xpediter package to test and debug within an on-line IBM IMS message region.

The test support option for Xpediter requires no change to source or object code and provides facilities to intercept execution of the application program at any location or when selected data elements are referenced, the vendor said.

The on-line IMS message region option for Xpediter is priced at \$5,000. More information is available from Application Development Systems, Inc. 1530 Meridian Ave., San Jose, Calif. 95125.

## 'Dlist' Ready For Prime Users

WOOD DALE, Ill. — Computronics, Inc. has announced Dlist software for use on Prime Computer, Inc. systems connected to Diablo Systems, Inc. or Diablo-compatible letter-quality printers. The software reportedly works with these printers, operating in an ACK/NAK mode.

Dlist was designed to run the terminals at up to 1,200 bit/sec, printing bidirectionally and to eliminate the time spent printing blank lines and spaces in a line.

The program is said to allow the user to print a file by specifying the "pathname" where the file is located, if the default options are acceptable.

The Dlist program includes "from" and "to" options, which allow printing of selected pages in a text file; a "pause" option to allow printing on stationery, with the printer pausing for a new sheet to be inserted automatically; and a "pagesize" option that allows printing onto paper of nonstandard lengths.

The vendor said the user can cause line numbers to be generated on the printout by using the "lnum" option. The capability to print files using Fortran carriage controls and file-specific formatting controls also are included, the vendor said.

Dlist is available for \$900 from Computronics at 130 N. Ash, Wood Dale, Ill. 60191.

## 'Prism' Analyzes Staffing Problems

ANN ARBOR, Mich. — A report-producing, human resource planning model that is a mathematical representation of a company's personnel system is available on a time-sharing basis from Comshare, Inc.

Prism was designed to help users correct overstaffing and understaffing problems and to analyze workforce mobility for problems like excess turnover and blocked career paths, the vendor said.

Prism is transaction priced from Comshare, Inc., 3001 S. State St., Ann Arbor, Mich. 48106.

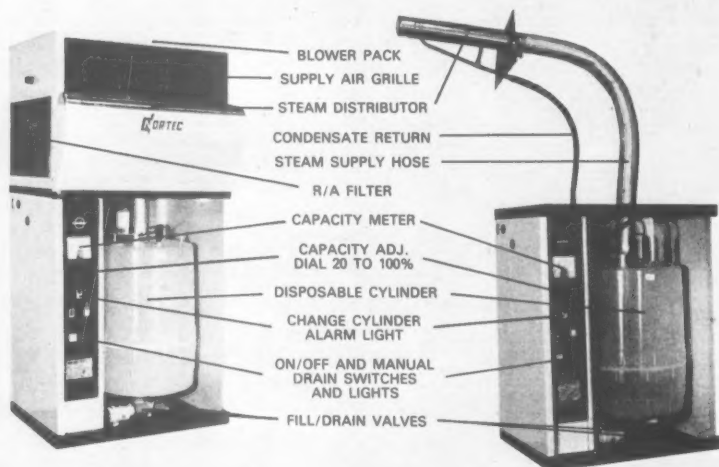


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### BIMDSLOG

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 Used by operators or programmers to review DOS/VS messages via CICS or SHADOW without tying up system console. \$720 or \$36/mo.

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## Job Accounting Available For System/34

BELLEVUE, Wash. — A job cost accounting package for IBM System/34 users was announced here by Jessup, Mallette & McBroom, Inc.

DPcost reportedly captures CPU and print time by workstation, user ID, job name, application code and user/workstation combination on a daily basis. It also maintains year-to-date and month-to-date totals by workstation, user ID, job name and application code, according to the vendor.

The package is available at a cost of \$375, including installation, documentation and 30-day money-back guarantee. Jessup, Mallette & McBroom, Inc. is located at 1810 116th Ave. N.E., Bellevue, Wash. 98005.

## System/34 Gets 'Bisync Host'

LITTLE ROCK, Ark. — A software package said to enable IBM System/34 users to poll and address a network of bisynchronous terminals has been announced by Arkansas Systems, Inc.

Designed initially to support automatic teller machines, the Bisync Host 34 allows development of programs on the System/34 to control polled networks of 3270-type terminals, the company said.

The Bisync Host 34 is priced at about \$10,000 from Arkansas Systems, Inc., Suite 206, 8901 Kanis Road, Little Rock, Ark. 72205.

## Dorex Package Aids Insurers

MECHANICSBURG, Pa. — Dorex Data Services, Inc., a subsidiary of Dorex, Inc., has introduced a software package designed to handle insurance agencies operating as underwriting managers and managing general agents.

The package is available for use on IBM System/32, System/34 or any other computer system using the RPGII language.

The package costs \$12,500. Dorex Data Services can be reached through P.O. Box 131, Mechanicsburg, Pa. 17055.

## Billing System Out For DG Nova 4

TAMPA, Fla. — Agency Datasystems, Inc. has introduced a magnetic tape billing program that travel agencies can use on Data General Corp. Nova 4 minicomputers to transfer airline ticketing information directly from its computer to the airline's computer.

The resulting tape also can be used to produce customer statements in conjunction with the Agency Datasystems' Corporate Report Generator. The magnetic tape billing program can be licensed for \$1,500, Agency Datasystems said from Suite 111, 1401 N. Westshore Blvd., Tampa, Fla. 33607.

## Four Subsystems Added to 'Docu/Manager'

SANTA ANA, Calif. — Four subsystems have been added by Application Development Services to its Docu/Manager documentation system for the IBM System/34. They include program and procedure documentation, data dictionary development, programmer aids and program development.

All are available singly or in combination, the vendor said, noting that the user manual for Docu/Manager can be stored online for access through help options.

The program and procedure documentation subsystem reportedly contains more than 30 documentation and analysis reports includ-

ing a new flowcharting program. It can document multiple libraries or an entire menu at one time, the vendor claimed.

### Enhanced Features

Enhanced features of the data dictionary development subsystem are said to provide users with new reports of the entire data dictionary by field or root name, recalculation of field lengths and positions and the capability of global changes to field names, the vendor said.

The programmer aids subsystem includes 13 new features including a document processor for creating user manuals and other doc-

uments. The global change capability for file and field names has been enlarged to include character strings, RPG indicators and file labels, according to the vendor.

A new subsystem has been added for program development, according to the vendor, which provides tools for editing, compiling and executing programs from one menu.

The enhanced version of Docu/Manager including all four new sections is licensed at \$1,275. More information is available from Application Development Services at Suite 214, 1700 E. Dyer Road, Santa Ana, Calif. 92705.

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Since network access and interfacing to packet networks are the key implementation concerns of users, Peggy Karp and Don Weir will explain packet switching, network interfaces and protocols, the X.25 link level, the X.25 packet level, and higher level protocols including X.3, X.28, and X.29. Local area networks and open systems interconnections will also be discussed.

After attending this seminar in either Boston (October 12-14) or in Palo Alto (November 30-December 2), implementation of X.25 and other packet switching protocols will be almost as easy as using a can-and-string network (and certainly much classier).

### Karp and Weir Are Back Again

Peggy Karp is a recognized authority on CCITT standards. As Executive Director of Product Engineering, she is responsible for the design and specification of new products and interfaces for GTE Telenet public and private network systems.

Don Weir is currently Director of Research and Planning for GTE Telenet. His duties include planning, system design, and development of advanced products including packet radio, broadcast satellite and local area megabit lines.

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## ISR Offers Financial Package For Local Governments

CORAOPOLIS, Pa. — Information and Systems Research, Inc. (ISR) has released a financial and personnel accounting software package for local governments that runs on Digital Equipment Corp. PDP-11 and Datasystem processors.

The Municipal Accounting Management System (Mams) reportedly features an "encumbrance-style" general ledger, which may or may not be employed, depending upon each individual local government's needs, according to ISR.

This general ledger, which is said to accommodate the need of a

local government to utilize fund accounting techniques, is the core module for the Mams software, ISR noted.

Other Mams application modules include payroll/personnel management, utility billing, real estate tax collection and income tax collection. Mams also includes a report program generator module known as Rims/MPG Co-Op.

The basic Mams costs approximately \$24,000 if all modules including the report program generator are acquired simultaneously. ISR can be contacted at Airport Office Park, Building One, 410 Rouser Road, Coraopolis, Pa. 15108.

## 'Ross/V' Package Updated For VAX-11s Under VMS

LEXINGTON, Mass. — Version 2.0 of Ross/V, a software package providing an RSTS/E operating system environment on Digital Equipment Corp. VAX-11s under VMS, has been released by Evans, Griffiths & Hart, Inc. (EGH).

New features include support for RSTS/E's binary input mode, echo control mode, multiterminal I/O and input and output escape sequence handling; support for reading and writing DOS and Ansi file structured tapes as well as for specification of tape density and parity; support for RSTS/E "sys calls" such as device assignment/deassignment, zeroing a magnetic tape and setting terminal

characteristics; and support for RSTS/E pseudo-keyboards, the vendor said.

Available immediately, Ross/V Version 2.0 is priced at \$10,000 for a single-CPU perpetual license with a one-year warranty including software support and any update releases of Ross/V during that period. EGH is at 55 Waltham St., Lexington, Mass. 02173.

## DEC Users Get 'Autoclaim'

MIAMI — RVR Data, Inc. has announced software for health insurance claims processing on Digital Equipment Corp. machines. Autoclaim is said to allow both local and remote, batch and on-line entry of claims.

Health care providers can submit claims from their places of business to a central host via programmable terminals, the vendor said.

Written in Cobol, the package runs on Decsystem-20, Decsystem-10 and PDP-11 computers. A one-time license fee costs \$75,000 and includes the first year's maintenance, the vendor said.

More information is available from RVR at Suite 427, 3900 N.W. 79th Ave., Miami, Fla. 33166.

## 'Trans' Links PDP-11, Intellec

COLUMBUS, Ohio — A software link between Digital Equipment Corp. PDP-11s and Intel Corp.'s Intellec Microcomputer Development System (MDS) has been announced by Micro-Base Associates, Inc. here.

Trans allows downline loading of programs from the PDP/11 to the Intellec machine, a spokesman said. The system includes a 20mA or RS-232 serial interface between the PDP-11 operating under RSX11/M or RSTS/E and the Intellec MDS and a set of software utilities on both ends to facilitate communications, file conversion and transfer capabilities.

Either type of interface with modem support allows users to dial up the PDP-11 for remote link-up.

Users may link as many Intellects to the PDP/11 as there are serial lines available. Priced at \$1,995, Trans is available from Micro-Base Associates at 3477 E. Livingston, Columbus, Ohio 43227.

## 'IDPS' Solves Routing Problems

HOUSTON — Bradford Information Systems, Inc. introduced the Interactive Distribution Planning System (IDPS), designed to solve distribution routing problems. It can be accessed via Control Data Corp.'s Cybernet time-sharing network.

IDPS reportedly establishes optimal trucking routes for minimizing mileage and fuel costs and also schedules orders available for delivery, the vendor said from P.O. Box 73111, Houston, Texas 77090.

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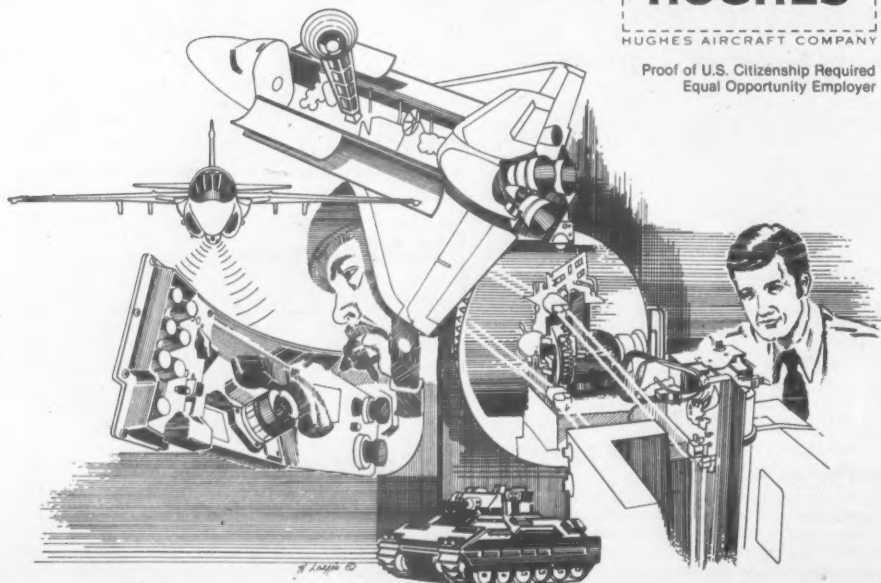
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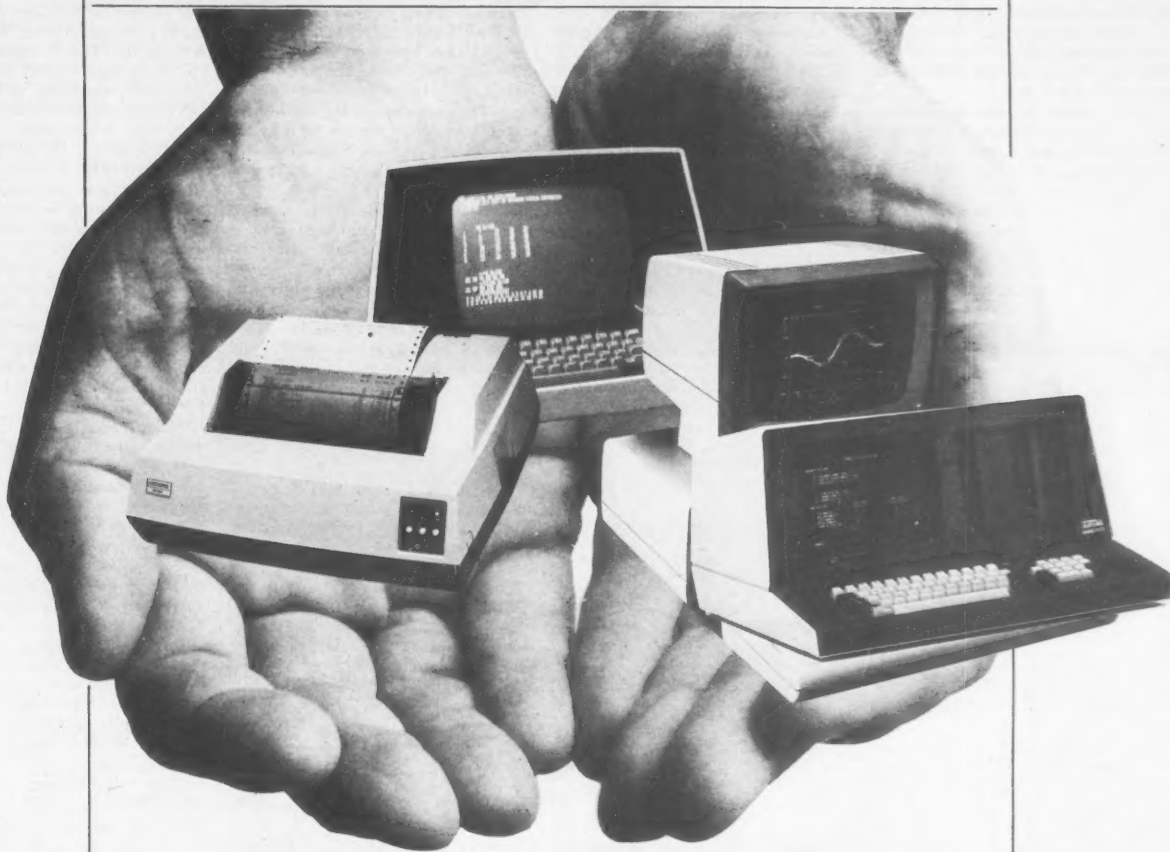
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# FRIENDLY SYSTEMS FOR PEOPLE PRODUCTIVITY



By Carolyn J. Morris

**T**he growth and evolution of the computer industry continues to parallel the changes in our economic and social environment. Price/performance for hardware components continues to decline as hardware developments have stabilized.

Software demands, however, are escalating exponentially. Computer systems vendors are experiencing a shift in revenues from hardware to software and services. Computer purchasers are rapidly realizing that the people who develop and use these computerized tools of the '80s are a scarce resource and, at best, very expensive. At the same time, many studies indicate that by 1985, data processing, the heart of most industries, could itself be the most labor-intensive industry in this country; perhaps 90% of the costs of data processing will be people costs.

The primary objective of the computer industry, especially the software developers, is to increase the productivity of the people who increase the productivity of every aspect of industry — from DP shops, to manufacturing facilities, to business offices.

But that which improves the efficiency of the programmer is quite different from the tools that help the office worker. The key to people productivity is systems designed to work the way users work — sys-

tems that are "friendly," human-oriented, intelligent enough to assist the people who interact with them.

#### Systems and Organizations

The productivity of computer systems themselves varies according to the type of machine and the application. For example, the productivity of a company's mainframes is measured by raw horsepower, millions of instructions per second.

For distributed data processing (DDP) machines, the focus is on transactions — measuring the data entry logs, terminal handling and data management capabilities for which DDP machines are known. Finally, the latest edge of the computer wave is the departmental computer, where the emphasis is on the usefulness and accessibility of information for everyday business people.

Despite these apparent differences in systems and their applications, one element of productivity seems to apply to them all — friendliness with ease-of-use.

The need for reliable, up-to-date information has always been recognized at every level of an organization. In the 1970s, the trend of declining hardware prices and specialized software applications packages caused a migration of computers downward through-

(Continued on In Depth/2)

## IN DEPTH

(Continued from In Depth/1)  
 out organizations: Corporate data centers were supplemented by divisional data centers; divisional data processing moved into multisystem networks for manufacturing control; and so on. Today the computer is rapidly becoming a simple tool that, like the telephone, can be inexpensive, personal, and easy to use, yet powerful enough for daily decisions and problem-solving.

Until recently, the distributed computing concept really meant distributed DP under the auspices of the local computer center, complete with DP support staff and facilities. These systems required programming staffs, computer operators and DP support for their daily operations.

A major breakthrough for DDP was the coming of age of the minicomputer in business. Long recognized for technical applications, the mini tried to emulate its big brother, the mainframe, in the business market. Moreover, the recognition of the value of on-line access to information vs. the traditional batch orientation opened new applications areas and further substantiated data communications, terminal handling and trans-

action processing functions as key ingredients to information management.

Bringing the DDP concept into organizations also forced the issue of "friendly" systems. Having the source of information in close proximity, while the information itself was accessible only through the DP channels, was a frustration to operating personnel. Why shouldn't the information be easily accessible for all?

The answer appeared to be that the people in the "front lines" of a business needed a system that was useful and productive for non-DP professionals, and this type of system was and is as different from today's DDP system as the DDP system is from the mainframe. The demands of operations personnel have changed the direction of computer applications. No longer are people willing to learn the communications channels of the computer.

If the computer is to join the realm of humanity, it must learn the ways of people. And, as with any new relationship, the friendlier, the better.

The computer industry is focusing on systems that are friendly assistants to the following kinds of peo-

ple:

- **Managers:** The decision makers who generally have no computer background themselves, but wish to use the computer to manipulate, analyze and present data in a way that supports decision making without calling in a programming staff.

- **Professionals:** Individuals who may be technical and who may at times use computers to design and implement applications for use by everyone. These professionals include analysts and programmers both in DP and on departmental levels in all markets from personnel to distribution.

- **Secretaries:** People who are non-computer-oriented, but who work as support for managers and principals. Their needs range from report generation to word processing, automatic filing and office management.

- **Clerks/Production Workers:** Non-technical specialists who use the computer for specific, usually specialized tasks. No application interface is required other than the push of a single button or the keying of a simple sequence.

### Information Management

The concept of managing information, not just data, evolved when computers began to be used as supplemental decision tools, not just high-speed calculators or sort-and-catalog devices.

Tools and systems developed for information management are designed to improve the productivity of managers, professionals, secretaries and clerks. These systems greatly reduce the need for programming in the development and maintenance of production-oriented transaction processing systems as well as make business information directly available to end users.

Additionally, information management systems focus on problems at a department level. This includes information sharing among departments, e.g., access by distribution to inventory records from the order processing department when trying to manage an unusual customer request. Ideally, access to remote resources should be transparent to the user. They should appear merely as extensions of his local resources. In this way, each department has the local data base and processing power it needs under its own control, plus access to essential information from other departments, as needed.

In addition to this type of information movement and sharing among departments, the system must also offer an interface to the traditional DP systems in the organization that provide the conventional accounting and centralized applications processing.

The ability of office workers or managers to move and access information across functional areas as well as physical boundaries implies well-integrated and standardized

data communications networks. This network structure offers potential for systems at any level of an organization to tap specific information banks almost without regard to physical location and use the information for localized decisions.

Using decision support tools, managers can add another dimension of accuracy to decision making. Projects can be planned using software that generates multilevel task diagrams, calculates cost in time and dollars for variations in schedules, monitors the progress of the project and signals critical areas for specific attention. A sales manager can project orders based on history kept in an archive file in the DP center, economic models maintained by the corporate finance group and product introductions scheduled by marketing. Sitting at a CRT workstation, a manager can view graphic or numerical representation of sales information, vary the results in "what-if" mode and calculate projections under a variety of conditions.

Today, the final forecast is still the decision of the manager. Tomorrow, with the advance of artificial intelligence into business applications, the decision can potentially be delegated to the computer.

Information produced by operations professionals can be formatted for viewing by sophisticated document production systems. The key to friendly, easy-to-use systems again relies upon integration.

The integration of word processing with graphics, with data management and with a network is not simply the "accumulation" of capabilities on a system. Reports compiled from information collected from various on-line sources, formatted by word processing units, enhanced by color graphics and closed with a personal digitized signature can be transmitted via electronic mail or produced in hard copy without programmer involvement. The manager and/or secretary responsible for the reports need only select the operations to be performed and initiate the process. The transition from operation to operation from the text layout to the graphics is accomplished via monitors transparent to the user.

Tasks to be performed in a sales office, for example, could range from memo preparation ("office automation") to order processing ("operations management") to a full-scale inquiry into what can be done to reduce receivables ("computer-aided decision making"). The departmental system must be able to handle this complete range of applications.

Daily operations at a department level involve interruptions, changes in priority, uneven work loads and unanticipated demands. The information management system must cope with all these as a matter of normal operation. The user must be able to interrupt again at will, and later resume the interrupted tasks — all in

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a natural way and without loss of data.

The heart of the information management system is the data dictionary, which contains information about every data base known to the system. The dictionary itself is a data base that will allow utility software such as report writers, data entry packages and query processors to use a single, uniform source of information. This reduces redundant specifications on both system and user programs.

Since the dictionary contains all information about the specifics of the data bases, including item types, lengths, formats, default print formats and semantics, it will be possible for a package like a report writer to interrogate the dictionary and obtain enough information to automatically produce a complete report including explanatory titles.

These automated "environments" for areas such as the office are not unlike the automated processes, which have existed within manufacturing shop floors for several years. Higher productivity is the goal. Automation of such mundane functions as filing, meeting scheduling and generation of routine correspondence can begin to shape a new productivity model for industry.

With this type of tool, business data is made available to programmers for the specific transaction processing applications of a company, and to management personnel for such functions as ad hoc reporting and decision-making. In addition to these obvious advantages, the dependence upon programmers by management is minimized and the programmer is free to create software, which meets specific needs of the company, not provided by the vendor-supplied package.

#### Changing the Fundamentals

As computers become more readily accessible, applications will appear as fast as the mind can conceive them. Software is changing some of the fundamental aspects of the application development process, including the speed at which an application can be implemented. Software tools are also relieving people of the rote functions or repetitive aspects of their jobs and thereby greatly increasing productivity.

For instance, programmer productivity has been estimated in terms of the total number of statements a programmer writes in a working day. By providing structured high-level languages, however, the computer industry is reducing the number of statements a programmer must write while increasing his total productivity.

Preprocessor functions increase productivity by eliminating redundant code within a program. Certain data declarations, for example, can be common to many different programs. With the use of a preprocessor

function, this code can be written once and stored in a file for later use by other programs. By referencing this file, the compiler itself will generate the code normally produced by programmers in a redundant fashion.

The goal is to provide users with a friendly environment in which to develop programs without sacrificing the power of operating software. One way to achieve this is by mini-

mizing the distinctions between the three stages of program development — coding, compiling and testing. The user moves from function to function, from code to debug, from debug to compile, without having to initiate several different programs. The transition from subsystem or program to program is transparent to the user.

User interfaces for such integrated software tools include softkeys,

hardkeys, an extensible set of commands, menus and user options. The screen area of CRT terminals can be divided into regions, which act as windows into various pieces of information. This allows the simultaneous viewing of these different pieces — for example, a program source listing and a symbolic debug dialogue.

By making multiple tools available to the programmer, the development  
(Continued on In Depth/6)

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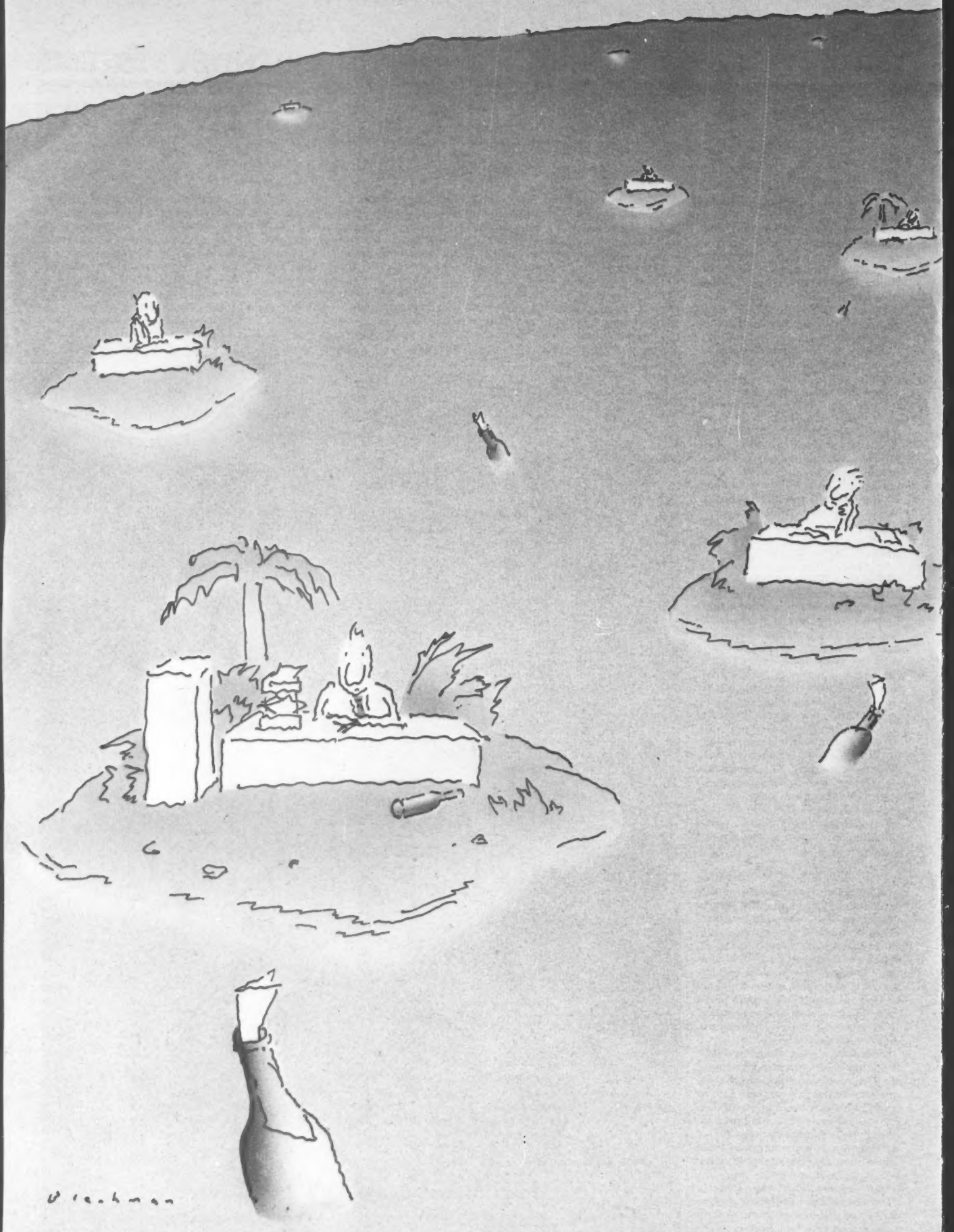
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## FRIENDLY SYSTEMS

In Depth/6

### IN DEPTH

(Continued from In Depth/3)

and maintenance of software is made significantly easier and faster, thus increasing productivity.

The integrated tools are becoming friendlier. For example, if a programmer enters a command to the system and happens to misspell the command, the system will discern the meaning without the programmer's having to reenter the entire command.

The design and coding portions of the development phase of an application take roughly 50% of a programmer's time, while the remaining 50% is spent testing and debugging the software. Therefore, a main area of concern for software productivity should lie in software tools to help programmers perform these functions.

If we can help programmers minimize the total work involved in each of these functions, especially coding and testing, productivity cannot help but increase.

#### Structured Design/Programming

In the 1970s, the concept of structured design and programming began to gain recognition. Prior to this concept, programmers were generally given a set of specifications, which had been drawn up by an applications analyst. The programmer developed flowcharts for logic and began coding in whichever language was available to the installation. Oftentimes the more creative the programmer, the more difficult the code to maintain.

Structured design requires an upfront analysis of a program in terms of input, output and the in-between processing. After the analysis, any complex processing is decomposed into lower, more easily manageable modules. The logic to perform the processing can now be developed in the form of pseudocode, followed by extensive walk-throughs of the logic. Finally, all files, records and fields are defined.

Structured programming presumes that a program basically uses three types of control structures. These types can be defined as sequence instructions, that is, one statement follows another in the program; IF THEN ELSE statements, where certain events are to take place based on conditions; and finally, the DO WHILE structure, which allows a looping effect.

Since the advent of structured design and coding, the productivity of programmers in terms of software development and maintenance has been substantially increased.

#### Nonprocedural Systems

Another advantage of the structured design analysis is the realization of certain commonalities of logic. This has slowed down our systematically reinventing the wheel with every new application.

For instance, generic data process-

ing functions such as reporting, sorting, selecting, updating and calculating may vary in format and data, but the logic used to carry out these functions will always be fixed. Because of this high degree of commonality in business applications, high-level, nonprocedural systems can be developed that allow end users to immediately use the computer for their needs without the help of traditional programming methods.

Individual packages or a complete vendor-supplied nonprocedural system can allow end users to bring up an application 10 times faster than with traditional programming. This speed of development makes informal applications by noncomputer professionals practical.

The use of a nonprocedural system for information management frees users and programmers to solve data processing problems by telling the system what is desired and not by telling the system how to carry out the logic of processing.

The nonprocedural system is complete, incorporating data base management with generalized data processing functions in a single package. It is driven by a data dictionary that provides for processing and data independence.

The data base is adaptable and easy to change. The data is at the center and is accessed through a data base manager. The generalized processing functions are accessed through a command language that can be used in both batch and on-line environments. For users with special processing needs that cannot be accommodated by the functions provided, there is a procedural language interface.

Some of the advantages of a system such as this relate directly to the cost of implementing an application. The cost involved with developing one line of nonprocedural code will be much less than the costs involved with procedural code. With nonprocedural code, the developer need not worry about logic design; all the logic is contained within the system.

For example, how many times does a programmer use traditional design, coding and debugging for file update logic, record selection logic and so forth? What are the costs to adapt to a changing environment?

The economics of managing an automated business dictate that the software industry develop ways to reduce dependence on specialists. A nonprocedural system could be part of the answer.

Added advantages of a nonprocedural system include the increase in system availability to users. These systems can provide a friendly interface between the user and the computer that does not require knowledge of a data processing language or of a data base structure.

A nonprocedural system will also be aimed at reducing the user development time by a factor of 10 and re-

  
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duce the maintenance time by a factor of 20. This means significant savings of time and costs in the development of an application.

**User Access Languages**

Along with the nonprocedural system is the continued enhancement of user access languages. These quasi-natural languages allow users to accomplish tasks via natural requests and responses. A specification language allows a user to print a report or draw a graph simply by entering answers to a set of questions that will be asked by the language.

Consider, for instance, an autoplot. The languages paint a screen on a terminal and allow the user to define, very simply, what the graph should look like. Things such as input data format, plot range, plot options and number of points can be specified by the user. The language itself will retrieve data from a data base, process that data and finally output the desired graph.

The technical implementation of user access languages in the 1980s includes three basic concepts. First, there is the need to develop a consistent internal representation for values and descriptions of data structures. For example, the data can be organized in an array, a stack or a linked list, but the consistency of the structure will be what is important.

Second, there is a need to understand the interrelationships of these structures. For example, the operations that will be allowed on the structures such as report generation, graphics and text management. Finally, there is a need to develop a set of rules governing the transformation of data. The data specifications will be mapped into a self-describing data base and to a set of allowable inquiries.

A nonprocedural access language is important because it enables a user to identify and select items in a data base by stating properties that they are to possess, rather than by an explicit search through the data base. The emphasis is placed on the qualities of the desired data, not on the

mechanics of locating it. The benefit to the user comes from the reduction in complexity and cost of writing application programs that use the data base. Additionally, unsophisticated users are provided with easy access to data.

**Tailor-Made, Standard Software**

As the cost of program and application development rises, users are looking to standard packages for use

in specific tasks in all areas of an organization from payroll to materials management to text processing. At the same time, there is a movement to provide vendor software, which can be customized to fit a user's specific need.

The use of custom-tailored solutions is evident today. These packages can be installed and tailored without the need for traditional programming languages. An application

monitor makes it possible for more implementation and day-to-day operations to be carried on by managers and their people who carry out specific functions. The principle of the customizable package is that a user's data can remain separate from the software. This allows the data to be modified, added and deleted without recoding the package (see Figure 1 on In Depth/8).

(Continued on In Depth/8)

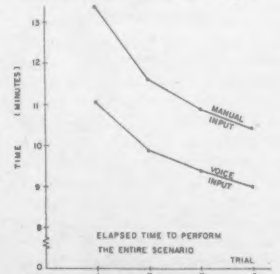
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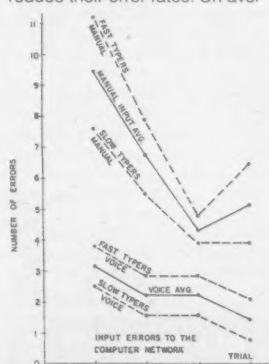
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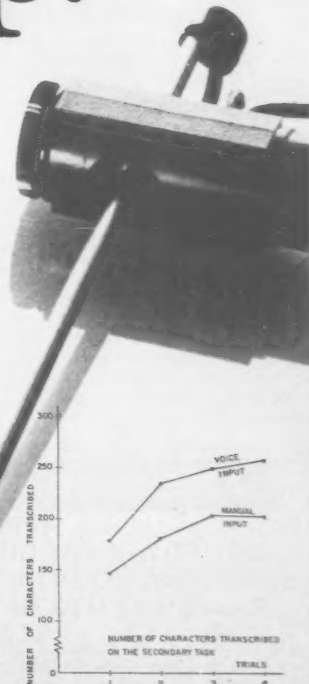
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\*Using Voice Input to Operate a Distributed Computer Network. Gary K. Pook, Ph.D., Professor of Operations Research and Man-Machine Systems, Naval Postgraduate School, Monterey, California, April 4, 1980

IN DEPTH

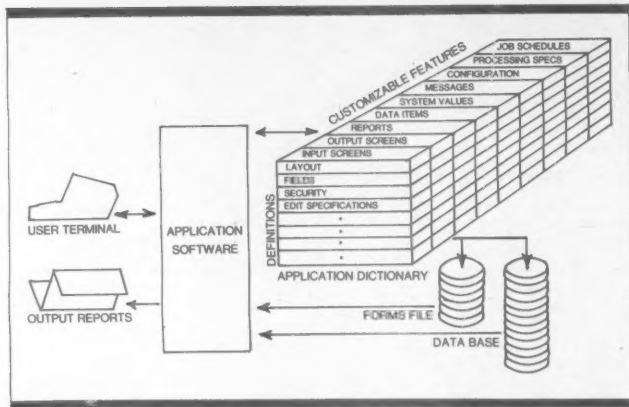


Figure 1. Customizable Software Systems

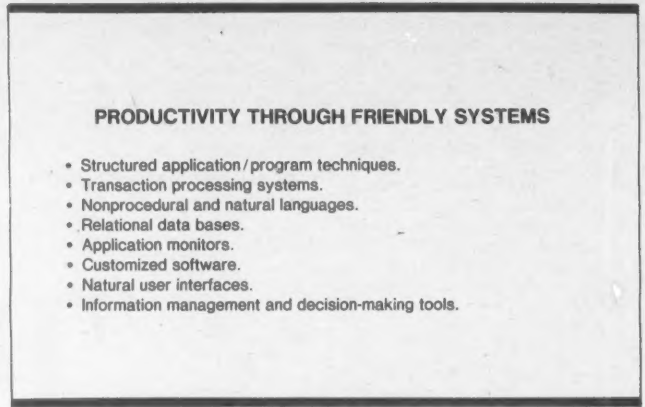


Figure 2. Summary of 'Friendly' Tools

(Continued from In Depth/7)

The solution to a problem can be viewed in two parts. First, there is the "hard" software. This is the software that is standard to the application, e.g., "add incoming orders to total order and subtract from the on-hand quantity." The second part of a solution can be viewed as "soft" software. This is the part of the solution that can be custom-tailored by the user. The software package must allow enough flexibility in the "soft" area for users to custom-tailor and also provide the essential "hard" software that will be the basis for the entire solution to the problem.

As with most transaction processing systems, an advanced application dictionary is used. Contained in this dictionary are data item definitions, including the name, length, data types and default values for all the items in the system. Other information contained in the dictionary includes specific screens for entering data into the system, data sets to store the information and report formats for printing reports. The central idea regarding the application dictionary

is to keep data, screens and reports separate from the operating software.

**The Interpreter**

A powerful interpreter acts as a buffer between the data and the software. The software, while processing, will specify certain pieces of information. The software will make a request to the interpreter to retrieve the specified information from the dictionary. If the user is entering new data to the system, the software will tell the interpreter to retrieve a particular screen from the dictionary. The interpreter will then pass this screen to the software, which in turn will paint the screen on the user's terminal.

The main advantage of an interpreter is that it allows users to design, develop and add new information to the application dictionary without modifying the software. The interpreter will handle all data transfers and initializations.

When the user desires to change information in the application dictionary, all he needs to do is use a cus-

tomizing software package provided with the system. The administrator of the system will need to know very little about conventional programming techniques. The customizer software will walk the user through this custom-tailoring process.

The system administrator will need only to request a change to the application dictionary. The customizer will access the dictionary and display a certain screen and based on that screen, the user can add items, additional screens, or report formats to the dictionary for later use. The interpreter will then take the responsibility of giving this new information to the software so that the user's custom-tailoring can be used in future processing.

**Final Comments**

The tools explored here are in existence today (see Figure 2). Some are still in the initial stages of development and the "friendly" personalities of the finished products are not yet complete. As with the computer industry evolution itself, first came the struggle for functionality, then came the smooth user interfaces.

Major interface technologies will further enable people to feel comfortable with automated solutions. There will be increased use of light pens, voice-response systems, color graphics, touch screens and graphics tablets.

People will expect and get output that is accurate, up-to-date and visual. For example, in response to the command, "Show me the European sales performance," a map of Europe might appear with each country a different color and raised to three-dimensional heights indicating relative sales.

Systems will be operatorless and eventually programmerless in the traditional sense. These professionals will be spending more time debugging solutions and applications instead of coding and debugging.

The office environment will become a smooth operation of automated word processing, filing and calendar maintenance.

Paper will be reduced through sophisticated electronic mail, and meetings will take place by video conferencing.

The limits of applications for these electronic tools are not measurable at this time. Each barrier seems to fall as new hardware and software technologies are developed by the expanding base of users.

The friendlier the systems become, the more applications are conceived to reduce effort and increase productivity. And so the continuum is in place for computers to begin a more integrated, friendlier relationship with people.



**About the Author**

Carolyn J. Morris is the product marketing manager for software on Hewlett-Packard Co.'s HP 3000 business computer line.

Previously, Morris was manager of sales and customer service for HP's General Systems Division.

Morris has worked with software systems and applications development and in marketing for 14 years.

Her educational background is in mathematics from the University of Texas. More recently, her focus has been on high productivity products for program and applications development.

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This article briefly treats some of the pitfalls to avoid and the axioms to follow when writing a policies and procedures manual. A few relate to format and layout, but the emphasis is on writing style and its impacts on the user. To help you remember these guidelines, they have been "gimmickly" organized into an acronym, POLICIES & PROCEDURES MANUALS (P&P), for the purpose of association.

These guidelines transcend P&Ps; they can be applied to user manuals for computer systems and systems documentation as well as non-DP-oriented manuals and business reports. We have a tendency to take both writing and the logic for putting a manual together for granted, but it's as much a science as MIS is — just a different technology.

## A Writer's Primer

# POLICIES & PROCEDURES MANUALS

By Stephen M. Goldfarb

**P**roofread your manual and have it proofread again by at least one other reliable person. It's difficult to catch your own errors and more difficult to proofread simultaneously for context, logic and grammar. Your eyes read what you want them to read, not necessarily what's printed on the page. Two pairs of eyes reviewing the document reduce the chances of a typographical error. And typos cut the heart out of the document's credibility. They reduce the professional status of the author in the user's mind. Word processing helps because you have to proofread only the changes you made to the document.

**O**rganize your material before putting pen to paper. Don't start by writing a policy in narrative or procedure in playscript before you have thought the process through. Unless you plan and organize, you'll end up reiterating some of the actions and steps. An unplanned document takes three times longer to complete than a planned document. The time you spend planning will pay off dividends in the long run. It will facilitate the timely completion of the document because there will be fewer surprises. Each step in the process has been predetermined and scheduled.

**L**eave lots of white space on the page. Most users are discouraged by seeing a document monotonously loaded with page after page of lengthy paragraphs, single spaced without headings and without any end in sight. The user may be more receptive to the manual if there are breaks in the page and section at which the reader's eyes are able to rest. White space makes the manual a little longer, but you may get the user to read it completely.

Lay out the page carefully, being sure to plan the arrangement of text, symbols, headings or illustrations. It should also have aesthetic appeal to the user. The type font should not be too bold or too condensed, making it difficult for the user to read. The layout should have a logic to it and be consistent from one section of the manual to the next.

**I**nterrogate the use of every word in a sentence, of every sentence in a paragraph. If it doesn't contribute to the message you're trying to relate, scratch it.

Indent for levels of importance using outline format to show the degree of specificity of the subject. For instance, use Roman numerals for first degree headings (significant general topics); use capital letters for the subtopics beneath. These are the second degree headings. As you indent further into the document, you cover a finer degree of detail. The users have the opportunity to scan and decide whether they wish to delve into all that detail or move onto the next significant general topic. It thus speeds the users' ability to pick and choose the sections which are most important for their purposes.

(Continued on In Depth/10)

## IN DEPTH

*(Continued from In Depth/9)*

**C**ycle the procedures. Be sure it is complete and goes from a beginning to a logical conclusion. Answer the following basic questions in any policy and procedure: Who does what, where, when and how? Don't leave the user hanging, wondering whether you've finished or not. Worse yet, don't let the user doubt its credibility. Assume that your statements are factual and that they are neither conjecture nor fiction.

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Condense your thoughts into as few words as possible. Be concise because users are busy; they don't have much time to read. Their time is spent in an operational mode. It's important for them to assimilate this knowledge quickly by reading short, understandable instructions which they can then implement.

**I**nterpretation of your procedure should not be necessary by the user if you have been concise, correct, complete and unambiguous. The user doesn't want to stop and think about what has just been read. The user wants to take immediate action. An ounce of doubt by the user or opportunity for subjective interpretation may cause the user to follow an incorrect course of action. Imperative directions give the user a clear course of action to follow.

**E**dit the manual vigorously. Don't think that your first thoughts put to paper represent your best products. However, editing can go on indefinitely and you will find yourself in an endless loop of editing every time you review your procedure or manual. Common sense tells you when the document is polished sufficiently.

Exchange ideas with someone else. You aren't writing for your own benefit so don't write in a vacuum. Get a different perspective on the subject by discussing your document with other knowledgeable colleagues. They will be flattered that you respect their opinion. Additionally, they may contribute to making your document more clear or provide you with new insight.

**S**quelch sesquipedalianism. The interjection of that word probably causes you to recoil. It means "the use of long words." It's not necessary to display the magnitude of your vocabulary with fancy words when the user is more familiar with a common word expressing the same idea. The user in all likelihood will not run to a dictionary to look up the meaning anyway. The shortest path to understanding is via short words, short sentences, short paragraphs, short procedures. Say what you have to with simple, strong, short words and ideas, then bow out. Short sentences also save space by cutting down the size of the manual.

**R**emove redundancies in your text. Have you written the same statement in different words (paraphrased) in close proximity? Such repetitions cause the user frustration and doubt. Screen them out in the edit stage or, better yet, train yourself to avoid them when writing manuals.

**O**utline each section of the manual prior to drafting the text. This will facilitate the process of filling in details as you redefine individual procedures or the whole manual. By building on an outline foundation, the specifics fall into their logical places. This is a corollary to the first "O" rule above.

**C**apitalize sparingly. The trend is to undercapitalize. If in doubt about capitalizing, don't. Lowercase words are much easier to read than those with capital letters. Did you ever notice how much more slowly you read a TWX message with every word capitalized, than you read a message typed in lowercase?

Consistency is far more important than variety. Consistency need not be monotonous. This pertains to format, layout and, of course, writing style. A thesaurus is helpful in writing, but it should not be used as a crutch. Don't look for synonyms to perfectly acceptable words which have been used throughout the text. Remember a synonym is by definition similar to the original word, not equal. The user's frame of reference can have a completely different interpretation for that synonym and this may lead to confusion.

**E**liminate sexist connotations, innuendos and obvious masculine or feminine words (e.g., his). This is a contemporary problem. It is an acknowledgment that a person, not a male or female, performs a task. Editing to eradicate sex bias only takes a little time, not cleverness, if you as the author have an objective frame of reference. Personnel manuals in particular have an obligation to reflect nonsexist orientation. Substitute "sales representative" for "salesman," "human resources" for "manpower." Pluralize "his," making it "their," whenever possible, thus showing applicability for males and females.

&amp;

P

**P**unctuate sparingly. The trend today is toward underpunctuation. Curb those commas. Excessive punctuation may be a signal that you are creating complex sentences. You may be trying to express too many thoughts before you reach your period in that rambling sentence. Prune the punctuation and be wary of what it may be hiding.

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IN DEPTH

**D**ecisive writing using simple words that give directions have more impact than words or statements that beat around the bush.

Delete diminutive details. In a procedure the user only wants to know what course of action to follow. These action statements are what the user focuses on when reading. It's not necessary to include words like "must" in your procedure. The fact that the action is stated without an alternate course makes it mandatory. Words like "must" talk down to the user and turn the user off. Unfortunately, management may feel this imperative tone adds clout to their procedure. It's a tough tightrope to walk.

Discretionary verbs confuse the user. Avoid verbs like "can" and "may" and their conjugations and variations. They signify the user has a choice in taking action, when in reality the writer wants straight line processing, without alternative paths to follow. The exception to this tenet occurs in personnel related manuals; EEO regulations often require permissive usage for legal reasons.

**U**nderstand the user's orientation. This is the key to success and acceptance for a manual. There are many facets to user orientation, most of which become clear when you understand where the user is coming from. Since we are focusing on writing style, inclusion of the user's vo-

cabulary is important. Forget your pride of authorship and the extent of your vocabulary. You'll probably never have to pick the manual up again after you've written it, but generations of users will read those P&Fs.

Don't give the users a sense of anxiety when you are inquiring and researching information from them. Let them know the reason you are asking them questions, the purpose

of the manual being developed. Otherwise the users may develop a sense of insecurity, thinking their jobs may be in jeopardy because of the introduction of an automated system. Users may be reluctant to cooperate to provide you with enough data or they may even attempt to give you erroneous information thus sabotaging your project manual. End users can be a valuable resource if both participants (communicator and re-

ceiver) understand where the other is coming from.

**R**ewrite your first ideas. This is a corollary to the "E" for edit letter. Often after you have put an idea on paper and let it sit for a day (Continued on In Depth/14)

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IN DEPTH

(Continued from In Depth/11)

or so, you'll come up with a refinement of that idea or maybe even a better idea. Consider new ideas; your original ideas are not cast in concrete. Rescue these smothered ideas after you've changed your frame of reference.

**S**pell correctly. Keep a list of your most commonly misspelled words on your desk. Don't always assume your typist will correct them. Misspelling and typos reduce your credibility with the user. There's no need to amplify this thought.

**E**liminate excessive and extraneous words and information. This is a corollary to the first "E" and "S" letters. This bears repeating.

**M**inimize your modifiers. The most important words in the procedure are

the subject, the verb and the object as appropriate. These are the essentials of a sentence and everything else, adjectives, adverbs, phrases, subordinate clauses is elaboration. Include those required for logic; others are discretionary depending on the context. This is a corollary to the first letter "I."

**A**im at your audience. This is a corollary to the letter "U" above. If you are addressing management audience, your writing style and format will differ from that used for financial analysts, order administration clerks or secretaries. Assure that your manual meets the users' needs.

Analyze and don't just write procedures. If you merely document you've lost an opportunity to clean house and improve the system. You do not puppet what your resource people tell you. By questioning the steps and the actions, you may be able to refine the system and not only the procedural writing style. When manuals are being developed, these questions may be raised: Is the system meeting the business objective of the user? Is each procedure and the manual as a whole meeting the objectives and needs of the user? If your answer is not affirmative, find out why.

something; they don't want to be directed to do it. It accentuates the superior/subordinate relationship, and may create a psychological barrier in implementation. Users may not be receptive to that tone of writing.

**L**imit loquaciousness. This is a corollary to letters "E" and "M." Long ago Jack Webb starred as police sergeant Joe Friday on the television series *Dragnet*. One of his pet quotations repeated in almost every episode when interviewing a witness was: "Just give me the facts, ma'am, just the facts." That's all the user wants, the facts and not window dressing.

Limit your sentences to one thought. Don't try to jampack a mountain of material in one long sentence. It will confuse the users causing them to reread and reexamine the sentence to extract the principle theme. If you are trying to convey technical information, it is even more important to keep this in mind because the subject matter is heavy to begin with. Spoon feed it in bite-size doses.

**S**hun generalities and substitute specifics. Don't write "financial report" when you mean "accounting report" or more specifically, "quarterly P&L statement." Don't write "promptly" when you mean "within 24 hours" or "before noon on the last day of the fiscal month." As you use a general term, your writing becomes more abstract and subject to misinterpretation by the user. Say what you mean and mean what you say.

Sequence your procedure and manual in a logical fashion.

Succinct writing has a definite psychological impact on the user of your manual, whether the user be manager or clerk. Its acceptability is directly related to your writing style (among other factors). The pendants of these guidelines may seem elementary, but the consequences of their violation can be substantial in terms of user morale and productivity and the fulfillment of management's goals and objectives.

About the Author

Stephen M. Goldfarb is manager of Policies and Procedure Administration — Corporate Field Operations (Sales, International and Services) at Digital Equipment Corp., Maynard, Mass. He has been a P&P professional for more than 10 years and is a member and past treasurer of the Boston Chapter of ASM. He is also the course leader for the American Management Association seminar, "Preparing Administrative Manuals." He holds a B.A. in international relations from Syracuse University.

**N**egate the utilization of negatives. Don't use a negative structure to express an idea if it can be stated in the positive form. Guard against falling into a trap of double negatives; these are confusing to the user. Don't say: "X is exceeded by Y," which is a passive negative statement, when you mean "Y is greater than X." The latter is a positive active statement.

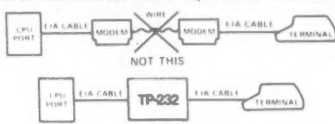
**U**se the present tense for procedures. Writers tend to use the future tense because they know as they compose the manual it won't become effective for many months. However, a manual is read when the user is ready to take action. Don't create a time warp for the user.

**A**void passive verbs, especially variations of "to be." Instead use active verbs. Active verbs make it clear who performs the actions instead of the latter.

Avoid being authoritarian in writing. Users want to know how to do

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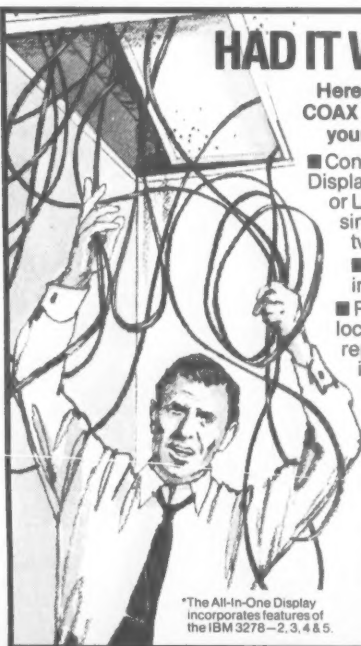
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# INTEGRATION IN OFFICE AUTOMATION:

## Are We Putting The Cart Ahead of The Horse?

By Raymond R. Panko

IN 1980, U.S. ORGANIZATIONS spent approximately \$125 billion to enhance the productivity and performance of office workers. Most of this money was spent on "discrete" systems — products that stood alone or were connected to only a few other products. (see Table 1 on In Depth/18).

But now there is a growing desire to integrate these various bits and pieces into a coherent system — a true "office of the future." Major users, having completed their basic word processing systems, see integration as the next big step. Vendors' research groups, in turn, are sold on the pressing need for integrated systems. A few smaller vendors have even begun to introduce first-generation integrated office systems.

Unfortunately, no two people seem to agree on exactly what "integration" really means. Boiling down what has been said and published about integration, however, four major concepts of integration seem to exist:

- The earliest form of integration arose in the mid-1970s, when several companies began offering systems that could handle both word processing

*In the rush to integrate DP and WP systems into a coherent 'office of the future,' we may be omitting an important first step: understanding the nature of office work itself. The author takes a look at the history of office integration and calls for a deeper understanding of the diversity of office work.*

and data processing. Most of these WP/DP products were designed for use in a single office area. A recent survey in *Office Products News* listed 129 WP/DP products offered by 43 vendors.

- A higher level of integration appeared in mid-1979, when Wang Laboratories, Inc. introduced its Integrated Information System. IIS combined word processing, data processing, electronic messaging and interoffice networking. Effectively, Wang's system created an embryonic company-wide system — a starting point for the "corporation of the future." Other companies soon introduced competing products, and today these integrated office systems (our generic name) are considered to be the cutting edge of office automation.

- At the same time, there is a growing sentiment that we should automate as much as possible of an individual's job. Text editing typewriters, for example, affect less than half of a secretary's day. So a full secretarial "system" would need tools for, among other

things: photocopying, delivering and filing documents electronically. These tools, together with text editing typewriters, would automate much of a secretary's day.

Managers, too, have a broad range of needs that might be met in a single system. These electronic desks (our generic name) are being developed not as stand-alone systems, but as components of integrated office systems.

- The fourth development is research on systems to automate large multiperson office processes. The individual, after all, does not work by himself or herself. Many things are part of routine, large-scale, multiperson processes — including the production of monthly progress reports, the management of projects and so on. If we can build programming languages to model and automate these large-scale automation (our generic word) or LSA processes, the productivity benefits could far outweigh those of tools for individual workers.

All WP/DP systems claim to offer both text handling and number crunching, but some are quite primitive in one or both areas. For example, some word processing tools in these

*(Continued on In Depth/18)*

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**We did. And whether it's a 30-computer installation like the one at Quaker Oats or a single-computer, first-time installation like the one at Maeward, Inc., the response was almost universal: satisfaction. Satisfied users, like those listed here, are one of the strengths of Burroughs.**

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"Mirrex, Incorporated, has been a Burroughs user since 1977. We installed a B1700 system and ran satisfactorily until we upgraded to a B1855 system. The conversion from one system to another was made without interruption of service to our plant by the close cooperation of the Burroughs Team, including Field Engineers, Sales Account Representatives, Field Technical Personnel and the Mirrex Operations Personnel. There is no question that Burroughs has earned a strong position in our future data processing needs."

**William H. Vedder, Jr., V.P.**  
Material Control  
Mirrex, Inc.  
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"We at Jockey feel that the two areas in which Burroughs is ahead of the other mainframe manufacturers are: ease of use through their operating systems and the outstanding field engineering service we receive."

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# Burroughs

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Electronic mail	1
Micrographics <sup>c</sup>	.9
Calculators	.8
Mailroom equipment	.6
Miscellaneous <sup>d</sup>	1
Office Furniture	\$2
<b>Total (Rounded)</b>	<b>\$125</b>

**Notes:**

- Includes all data processing done to handle what would normally be considered office functions.
- Includes the labor needed to plan, operate and maintain office systems. Data processing center labor would fall into this category. Does not include end user labor.
- An unknown portion of this micrographics spending really belongs under office data processing.
- Includes answering systems, dictation machines and many other items.

Table 1. Estimated U.S. Spending on Office Systems 1980

(Continued from In Depth/15)

WP/DP systems involve little more than the capture, editing and printing of text. But state-of-the-art WP products now on the market do far more than this, providing facilities for centering, right justification, automatic proofreading, sorting and merging, Boolean searches, the cataloging of drafts and finished docu-

ments, document transmission and even photocomposition.

In terms of data processing functions, most WP/DP systems offer programming languages, but programming languages do not, by themselves, constitute data processing in the eyes of most users. Users do not want machines — they want solutions to business problems, in-

cluding accounting, billing, payroll, inventory, investment analysis and information summarization. Nor do they necessarily want to write programs; often, they want to buy a complete turnkey system, including all hardware and application software.

These complete DP systems exist and were designed for the needs of an office; the industry calls them "small business systems." Industry Data Services estimates that 1980 sales of small business systems were \$2.4 billion. Yet some WP/DP systems offer no DP applications packages at all, and others offer only limited and flawed packages.

Integrated Office Systems (IOS) combine at least the following: word processing, electronic message systems (EMS) and interoffice networking. The presence of EMS and networking at least potentially tie together the entire company (or at least a multioffice unit) into a single system.

The first major IOS was NLS, which was created in a long-term development program at SRI International Inc. during the 1960s and 1970s. In 1974, NLS was offered on a semicommercial basis. In the late 1970s, the system was transferred to Tymshare, Inc. where it is now offered under the name Augment and is being expanded considerably. Although Augment offers only rudimentary DP tools, it is listed as an integrated office system because of its highly advanced design, which allows any program to operate on any file. These files can be highly structured, and new Augment subsystems can be designed very quickly.

Publicity for integrated office systems, however, was very slight until Wang Laboratories, Inc. introduced its integrated Information System in mid-1979. Wang added WP to its highly regarded small business systems, added DP to its higher-end word processing systems, added EMS to both, and tied everything together through its cable-based Wise networking system. Although strong in both WP and DP, the original IIS design was weak in both EMS and the flexibility of its networking system.

Toward the end of 1979, Datapoint Corp. introduced its Integrated Electronic Office (IEO). Building on its expertise in distributed data processing, Datapoint added WP and EMS to its ARC computer network architecture, which already embodied extensive DP tools. Datapoint's IEO also includes the company's Infoswitch telephone control and routing systems.

Early in 1980, Prime Computer, Inc. introduced its Office Automation System (OAS). Prime's system has an upper limit of about 60 users, so it is not expandable into a full "corporation of the future" system. On the positive side, Prime is one of only two IOS vendors to concentrate on

the "electronic desk" tools for management that are described in the next section.

The other IOS vendor who has offered electronic desk tools is the Axxa Corp. Axxa's System 90 was originally developed at Citibank. Prohibited by law from entering the office automation business, Citibank spun off Axxa to sell the technology it had pioneered.

These systems are just the first of many, and each will evolve tremendously in the future. IOS is still in a very early stage of its development.

Future integrated systems will add images and voice to text-handling. Several commercial products already translate text into images, including communicating copiers (which can create page images from Ascii text input) and systems that can convert Ascii text into facsimile transmissions. The reverse process of converting images into Ascii characters has been demonstrated in the laboratory. So have techniques for digitizing and compressing voice for use in Voice Message Systems; these new techniques should make voice highly manipulable in the future.

In the foreseeable future, the growth of the integrated office system is expected to be slowed by the absence of standards for such systems. Each vendor has adopted its own network architecture and cross-vendor interoperability is limited or completely nonexistent.

Both the International Organization for Standardization (ISO) and the Consultative Committee on International Telephone and Telegraph (CCITT) are developing standards for computer architecture and there is hope that solid international standards for transmission protocols somewhat above the level of X.25 (the packet network protocol) will appear in the next five years.

But standardization at the applications level is a far more difficult problem, as the author's study of EMS standards has indicated. Unless one or two vendors dominate the IOS market, thus creating de facto standards, or unless some dramatic breakthrough occurs in standards, users should expect to endure massive standardization problems for many years, unless they stay with single vendors for most components in their backbone systems.

Despite standards problems, IOS system designs should continue to evolve very rapidly. How rapidly the entire market for IOS grows, however, depends entirely on user demand, which is currently a matter for conjecture.

At the end of World War II, *The Atlantic Monthly* asked the outgoing science czar, Vannevar Bush, to write an article on some topic of interest. Instead of reminiscing on his war years, Bush wrote a forward-looking article, "As We May Think," which described a hypothetical computer

(Continued on In Depth/20)

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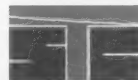
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## IN DEPTH

(Continued from In Depth/18)  
system called Memex.

Memex would, first of all, be a scientific information bank, with all the world's scientific literature stored in an area about the size of a desk. In front of the scientist would be three very large screens to portray information. The computer itself would be very sophisticated, learning and remembering the scientist's search behavior and sometimes showing

connections. Like many of the designs that followed, Memex was intended to integrate as much as possible of an individual's daily work in a single system.

Bush was followed by a number of other theorists who described hypothetical "electronic desks" like Memex. Among the most notable of such efforts was Ashby's work in "Intelligence Amplifiers." Not until Englebart, however, were any of

these ideas turned into hardware.

In 1962, Englebart created a broad conceptual framework for "augmenting" human intellect through computers. Even today his pioneering work reads with remarkable freshness. Englebart then found government funding and assembled a team that built a series of programs to implement his ideas. This was the NLS (On-Line System) series, which later became the commercial 'Augment

product, as mentioned earlier.

In the 1970s, Rand Corp. engaged in a strong research effort to explore electronic desks. This was the Rita project. Other notable recent efforts were: Citibank's system for top executives, which is now for sale as the Axxa System 90, as noted earlier; Xerox Corp.'s Alto system (which borrows from Augment); and Darcom's Elite system.

Today, the idea of an electronic desk is becoming widely accepted. But instead of being guided by the grand theories of Bush, Ashby and Englebart, current vendors are taking a much simpler approach, providing a limited and ad hoc cluster of services with immediate applicability. No full electronic desk is now on the market, but we can imagine what one would offer:

- Powerful reading facilities to support browsing through longer documents and simple data bases. This critical function — reading — is probably the most difficult of all, yet its difficulty is frequently ignored.

- Personal filing and retrieval systems for commonly used information: notes, drafts, finished documents, to-do lists, addresses, telephone numbers, appointments, and so on. A data base management system would allow structured files to be created, updated and deleted easily.

- Easy access to large organizational and public data bases, through a unified search language or a system like Videotex.

- Text entry and cataloging, to allow the user or support staff to enter documents and manage them with state-of-the-art WP tools.

- Electronic message systems to exchange notes, business forms, drafts and finished documents. At least in the case of forms and return-requested information, messages could be interactive.

- A reminder system to prompt the user on critical days or when certain conditions occur. Ticker files would keep track of work expected from others. Full-blown project management tools could also be included.

- General calculation tools at least as powerful as those of a programmable calculator, together with software packages for such common Decision Support System applications as project management, financial analysis and job estimation.

The list is certainly not exhaustive, but there is some danger that it would be exhausting to users. A study of EMS users at Darcom indicated that EMS, like any other product, has nonusers, light (simple) users and heavy (sophisticated) users. "One size fits all" rarely works in consumer or industrial products, and there is no reason to expect it to work in office systems. The needs of light and nonusers need more serious attention than the typical paragraph in a long manual telling them to use only simple functions.

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## IN DEPTH

Since IOS is already growing rapidly, we can expect electronic desks systems to appear as applications in larger integrated office systems, rather than as stand-alone tools. As noted above, Prime and Axxa are already going this route. Whether electronic desks employ personal computers, shared minicomputer systems, or large mainframe computers is basically irrelevant to the electronic desk concept.

The major problem facing electronic desks in the near future will be our lack of understanding of office work. Since the time of Memex, designers have worked either from hazy stereotypes of what office workers do or from shallow empirical studies. Even such simple concepts as market segmentation and formal benefits analysis have not been used in any sophisticated way to understand user needs.

Historically, system designs have focused on individual office workers. This has been true even in electronic message systems, which are essentially tools of collaboration. In EMS, our software designs have focused primarily on the user's interactions with the system.

But the individual is not always the best unit for analysis. The firm, after all, is like a living organism. In an organism, specialized parts (heart, lungs, etc.) do not exist for their own purposes but rather to provide certain outputs to the rest of the organism. In the same way, a department exists only to provide outputs to the rest of the firm.

The individual, too, is hired only to provide certain outputs. In his analysis of effective managers, Drucker found that more effective managers tended to focus on the external results required of them, while less effective managers tended to focus on the tasks they do. The organic nature of organizational work suggests two levels of analysis:

- First, we can focus on multiperson procedures in a firm as our basic unit of analysis, instead of the individual. We can then build systems to automate these procedures.
- Second, at a higher level, we can focus on the results expected from department or process and design systems that can create new procedures to achieve these results.

### Procedural Systems

Clerical procedures are the simplest to automate because they are so routine. Most of the early uses of computers involved the automation of large-scale route clerical processes such as ordering, accounting, billing and personnel transactions. Even today, computers are used predominantly to automate large-scale clerical transaction-processing procedures.

In the past, procedural automation systems for clerical tasks have been programmed in general high-level languages, such as Cobol, RPG, and

Fortran. Now, however, we are beginning to see very high-level languages designed to simplify the creation of procedural automation systems.

One effort along these lines was IBM's Business Definition Language (BDL). BDL was designed to handle traditional DP programming applications. More recently, we have seen a flurry of efforts to design more flexible and more powerful languages for

modeling and automating clerical processes. Ellis and Nutt, in a 1980 survey article, listed activities at AT&T, Burroughs Corp., Eastman Kodak Co., Exxon Corp., IBM, 3M Corp., Xerox Corp., MIT, the Wharton School (Scoop), the University of Toronto and the Harvard Business School. There has also been a strong program at the University of Arizona, which has drawn on earlier modeling work at the University of Mich-

igan.

In parallel development track, a number of electronic message system designers have viewed EMS merely as a backbone system, onto which processing modules for individual clerical workers (and managers) could be grafted. EMS would then evolve into a general tool for automating large-scale organizational processes.

(Continued on In Depth/24)

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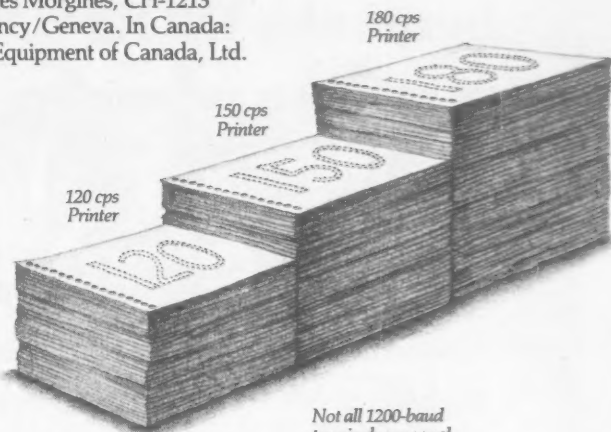
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## IN DEPTH

(Continued from In Depth/21)

In EMS, computer conferencing has always focused on group processes, although in practice computer conferences are rarely structured to any extent. More recently, special-purpose EMS have been built to automate highly-structured communication processes. Among these has been the Military Message Experiment system, which was created to automate some of the highly com-

plex and structured processes of mandatory routing and copying that are required after a message has reached a military base.

In 1977, the author suggested that EMS could evolve into "large-scale automation," or LSA. In LSA, the basic message system would be intelligent, taking the initiative in scheduling mandatory communications and even initiating communications when certain events occurred. The

message component would form a backbone for the LSA system. When nonmessage work needed to be done, this could be imbedded in programs that initiated or received messages or, of course, it could be performed by a human actor.

The idea of using a basic flow system with processing in its nodes was, in fact, already being developed when the author's ideas on LSA were published. The IBM Business Defini-

tion Language for data processing, for example, used a flow-control mechanism (its Form Definition Component and its Document Flow Component), plus a processing mechanism (the Document Translation Component) at the nodes.

In addition, Zisman had developed his Scoop system at the Wharton School. Scoop used Petri Nets for the flow component and production rules at the nodes at his processing mechanism. Scoop was originally built for a large computer, but Zisman has since created a version for an IBM 5100 desktop computer.

Although we are really just beginning to see experimental systems that automate procedures, we probably can expect to see commercial products by 1980, thanks to the intense work being done in this area.

In the more distant future, systems should be able to tackle even higher-level and less structured recurrent processes.

### Focus On External Results

The shift in thinking from hardware systems to procedure automation took many years. It may take many more years before we really understand how to focus on external results rather than on procedures — which are, after all, merely the processes created to achieve these results. Although this topic has been discussed extensively in the management literature, very little has been written about it in the office automation field.

Looking back over the history of integration, one impediment seems to have been far more responsible than any other in retarding the evolution of office automation. This has been our abysmal lack of knowledge of office work.

While only a few analysts still cling to the notion that an office consists of a manager who spends the entire day typing, our views of the office are still hopelessly naive. We still fail to see the tremendous diversity of office work. And we still fail to understand the actual importance of information processes.

The real challenge for the next 10 years will not be to build more powerful office systems. It will be to answer the question, "What is an office?"

### About the Author

Dr. Raymond R. Panko teaches in the Department of Decision Sciences at the University of Hawaii at Manoa.

In 1973 he joined SRI International and in 1974 conducted the first commercial investigation into the future of EMS as a business. He spent one year at the company's Augmentation Research Center, where the first integrated office information system was created. In 1977 he joined the business school faculty at the University of Hawaii.

Panko received his Ph.D. from Stanford University and his B.A. (physics) and MBA from Seattle University.

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DECISION SUPPORT SYSTEMS (DSS) have been widely written about in recent years. Many articles on the subject are anecdotal, describing various decision support systems built for specific applications.<sup>1,2</sup> Others examine general issues confronting the DSS field, such as what constitutes a decision support system.<sup>3,4</sup>

To a certain extent, growth of the DSS field is analogous to the growth of the management information systems (MIS) field. Beginning in the 1960s, a steady stream of articles was written either extolling the virtues of MIS, or claiming that results were not forthcoming, or suggesting that the whole notion was unclear. At the same time, many companies organized MIS groups and made substantial investments to build what they considered to be management information systems. Even though the debate about the nature of MIS continued, many companies held the view that their investments were well-rewarded.

In addition, many new general software tools have appeared that facilitate the development of application-specific MIS. Most prominent among these tools have been generalized data base management systems (DBMS) for mainframes, minis and even micros.<sup>5</sup>

One might reasonably expect that the next major development in the DSS field will be the appearance of general software tools for facilitating the creation of application-specific decision support systems. An understanding of likely characteristics of this new class of software tools can be gleaned from the generic DSS framework expounded in the *Foundations of Decision Support Systems*. Not only does this framework suggest needed DSS development tools, it also enables a clear appreciation of DSS and provides a basis for the comparative study of decision support systems.

Following a discussion of DSS traits, we will briefly examine the generic framework. This will lead to the consideration

# Development Tools for DECISION SUPPORT SYSTEMS

By Robert Bonczek, Clyde Holsapple  
And Andrew B. Whinston

of generalized problem processing systems as tools for DSS construction.

## DSS Traits

The common bond between MIS and DSS is their mutual reliance on a mechanism for managing data. The two differ according to the way in which data is used. In the case of an MIS application, data is used in carrying out routine, repetitive transactions. In the case of a DSS, data is used to answer the ad hoc, exploratory questions of a user who incorporates these questions and answers into a decision-making process. Since a given system's data could conceivably be used in both ways, the dividing line between MIS and DSS is not always clear. However, the difference in emphasis between the two is quite clear.

Generally speaking, a decision support system can generate answers to user queries through data retrieval, model

execution or both. This is depicted in Figure 1. The data retrieval approach includes not only the use of traditional data base retrieval mechanisms, but could also entail inferential retrieval,<sup>6</sup> where an answer is inferred from stored data via formal logic. Various inferential retrieval methods have been devised by workers in the field of artificial intelligence (AI).

Another approach to answering an ad hoc user query is through the execution of a computational model that draws on stored data. This model may be explicitly specified by the user, invoked by the user or selected by the decision support system itself.

Which of these alternatives is available depends on the nature of the particular DSS being examined. A DSS classification schema based upon these alternatives is detail led in *Foundations of Decision Support Systems*, referenced above.

Operating under the first al-

ternative, a user procedurally specifies the model's algorithm. Under the second option, a user has knowledge of the pre-specified models available to the DSS and chooses one of these for execution. With the third option, a user may be unaware that the DSS is even using models; it is the DSS itself that selects (and perhaps even formulates) an appropriate model for execution in response to a user's request for data. Current decision support systems adopt the first two alternatives.

Notice that as we progress from the first to the third alternative, less user effort is required. However, increasing degrees of intelligence (artificial intelligence) are required in DSS behavior. This is an area where future DSS developments should profit from work in the AI field.<sup>7</sup>

A particular decision support system, just as a particular management information system, is application-specific. It is important not to confuse a decision support system with the software tools from which it is built. (Similarly, a management information system is not to be confused with the data base or file management software package with which it was built). Decision support systems for many different applications could be built with the same software tool, to the extent that this software tool is general. In the following discussion, various degrees and types of generality are identified.

## Generic Framework for DSS

According to the generic framework of Figure 2,<sup>8</sup> any decision support system can be characterized as having three components: a language system, a knowledge system and a problem processing system (PPS). Through a language system, a user states problems for the decision support system to solve. Facts about an application area that are pertinent to solving problems arising for the application are represented (Continued on In Depth/26)

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## DECISION SUPPORT

In Depth/26

### IN DEPTH

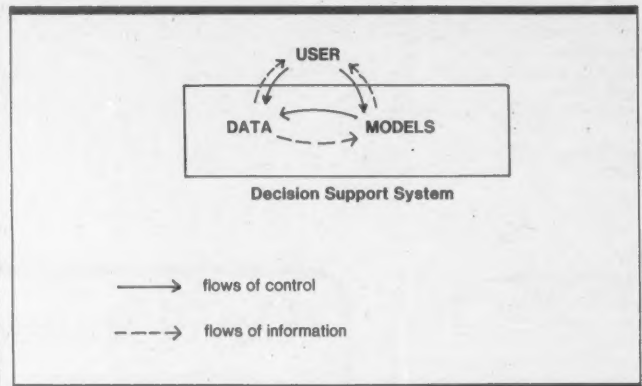


Figure 1

(Continued from In Depth/25)  
in the decision support system's knowledge system. At the heart of a DSS is its problem processing system. In broad terms, such a system accepts problems represented with the language system and utilizes application-specific knowledge represented in the knowledge system in order to generate information for decision support.

Whereas the PPS is the dynamic (executable) component of a DSS, the language and knowledge systems are for representation. The nature of a language system is seen in its syntactic and semantic rules, which indicate permissible problem expressions. Similarly, a knowledge system is characterized by the facilities it uses for representing and organizing knowledge.

Language systems vary according to the degree of proceduralism required for expressing a problem.<sup>8</sup> At one extreme are procedural languages with which a user states a problem by specifying the procedure to be used in solving that problem. The user of such a system is a programming user. At the other extreme are nonprocedural languages with which a nonprogramming user states a problem by merely specifying the characteristics of that problem's solu-

tion. For instance, LIST DIVIDEND FOR YEAR = 1985, SHARES = 100,000, AND GROWTH-RATE = .11 describes the characteristics of a problem without giving a procedural specification.

Between the two extremes are languages that are semiprocedural. Language systems also differ in terms of how English-like they are, whether they are interactive and whether they are parametric (menu-oriented).

#### Types of Organizations

Aside from the knowledge they contain, knowledge systems vary according to the way in which knowledge can be organized. A knowledge system may use file or data base organization. If a data base approach is used, it may be hierarchical, network or extended-network.<sup>9</sup> Other reasonable methods for knowledge representation include those from the artificial intelligence field, such as production system and predicate calculus approaches. Furthermore, it may be advantageous to integrate AI approaches with traditional data base approaches.<sup>8</sup> In addition to mundane descriptive knowledge, a knowledge system may also contain procedural knowledge in the guise of models.

A PPS is the software component of

(Continued on In Depth/28)

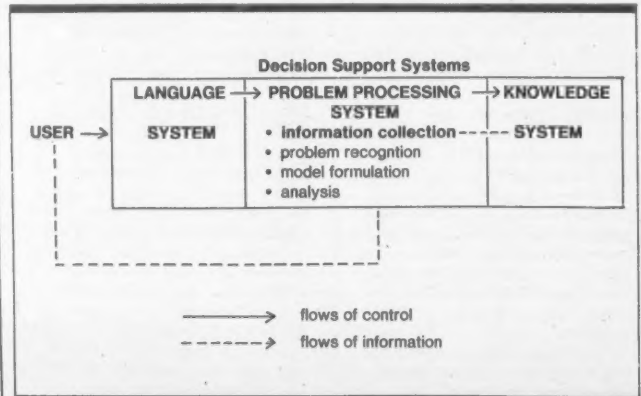


Figure 2

# Some people go to extremes to get TSO access



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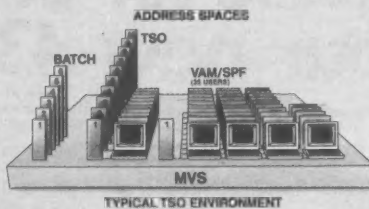
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IN DEPTH

(Continued from In Depth/26)

a decision support system, controlling the DSS' activities and determining its behavior. The coding in a PPS depends on the features of the language and knowledge systems that are used for the DSS. Problem processors may also vary in terms of the generality and scope of their abilities. At the minimum, a PPS must have the abilities to collect information from a user (stated in terms of the language system) and from knowledge system. The former involves the manipulation of language system expressions, while the latter involves the manipulation of data in the knowledge system.

A PPS must also have the ability to explicitly recognize problems by transforming any problem statement into an appropriate plan of action. For instance, if the language system is a nonprocedural query language, then the PPS is said to have explicitly recognized a problem when it has converted that problem into a detailed, procedural specification. When executed, this procedural specification results in an answer to the problem. This notion of a PPS' problem recognition ability is akin to the familiar idea of compilation (or it could also be thought of from an interpretive angle).

As indicated in Figure 1, the procedural specification that results from explicit problem recognition may involve not only data retrieval (either traditional or inferential), but also a computational model. Of course, if a user directly indicates the required model through the language system, then the PPS does not need to recognize the modeling problem, since the

user has already done so. However, if the PPS must select one of a number of models or if it must formulate a model from existing modules, then a more sophisticated problem recognition ability is required. The PPS must be more intelligent.

In the latter case, which involves model building, the PPS must have another ability beyond the dual information collection and the problem recognition abilities. It must possess

a mechanism for formulating models. This model formulation ability acts as a service to the problem recognition ability.

Yet another important PPS ability, where models are involved, is that of analysis. Analysis is the interfacing of models with data in order to produce some facts, beliefs or expectations. Once the PPS has explicitly recognized a model and the data that is to be used by it, an analysis mechanism

instigates and governs the execution. This may merely involve a jump, or it may involve model (or module) loading together with the initialization of model parameters. The degree of sophistication required in a PSS' analysis ability depends in large measure on how models are maintained within a DSS. For example, the models may be embedded in the PPS code; or there may be numerous modules held in auxiliary



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IN DEPTH

memory, whose inputs and outputs need to be coordinated when they are used together as a model.

In this section, we have sketched out the generic framework for DSS, discussing the natures of the three DSS components. Alternative kinds of language and knowledge systems were identified. A DSS' problem processor must conform to its language and knowledge systems. Several important PPS abilities were de-

scribed. Although other abilities could be incorporated into a PPS, these will suffice for the discussion that follows.

**A Generalized PPS**

The broad outlines of a software tool for DSS development should be clear from the foregoing generic framework. We can now sketch out more of the details of such a tool. First, notice that it must have a con-

siderable degree of generality. The less application-specific a PPS, the more valuable it is for producing customized decision support systems. If a PPS is not oriented toward a particular application area, we refer to it as a generalized problem processing system (GPPS). The code of a GPPS is invariant to differences among application areas and to changes within an application area.

The generality of a problem proces-

sor suggests that its associated language and knowledge systems are also general in certain respects. The grammatical structure of the language system cannot be application-specific, otherwise changes would be required in the associated PPS whenever changes are made in the language system grammatical structure to accommodate different applications. Similarly, the data-structuring constructs of the knowledge system associated with a GPPS cannot vary from one application to another. Such variation would prevent problem processor invariance, since different data manipulation facilities would need to be incorporated into a PPS whenever data-structuring constructs change.

If two different decision support systems were built with the same GPPS, they would exhibit some language system and knowledge system differences. The lexicon of one decision support system's language system would not be the same as the lexicon of the other's. Although the language systems use the same general grammatical structure, terminal symbols vary across language systems in accordance with the different vocabularies required by distinct applications. Alterations in vocabulary need not cause changes in PPS software.\*

Knowledge systems, while using the same set of data structuring constructs, differ in terms of data structures and knowledge organized according to those structures. GPSS software is based on the constructs used and is unaffected by the way in which they are used in devising data structures for various applications. Nor is this software affected by the knowledge system's content.

**Builder's Options**

Given a GPPS, the builder of a decision support system for a particular application is responsible for establishing the application's vocabulary, defining an application-specific data structure and initializing (and perhaps providing a mechanism for maintaining) the application-specific content of the knowledge system. An alternative approach to DSS construction is to devise and implement a specialized PPS for each application. Between the two extremes of using a GPPS and coding an application-specific PPS from scratch is the option of incorporating generalized software packages (for example, data base management software) into an application-specific PPS.

Relative advantages of the GPPS method include a standardized approach to DSS development, a shorter development time, easier alteration and maintenance and lower overall cost. Of course, an application-specific PPS may be somewhat more efficient from a performance standpoint.

It is instructive to consider the par-  
(Continued on In Depth/30)



(PLEX) to COBOL, PL/1, FORTRAN and Assembler. These extensions greatly facilitate their design efforts, freeing them to develop new applications as well as to update old. The Report Writer facility makes both on-line and batch reporting a routine and worry-free task. The discovery of PLEX's rich menu of powerful programming capabilities no doubt started the first bottle of champagne around.

End users were not forgotten in the software celebration. SYSTEM 2000/VSE DBMS provides QUEST, a free-form, English-like language that allows end users to create, update and retrieve data bases without programmer assistance. End users are also able to take advantage of Report Writer's wide-ranging capabilities. By providing end users with direct access to data, you further ease application backlogs and contribute to even greater programmer productivity.

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## IN DEPTH

(Continued from In Depth/29)

allel between the role of a GPPS in DSS construction and the role of a generalized DBMS (GDBMS) in building an MIS. The GDBMS software is invariant to application changes. Application-specific aspects of a GDBMS-based MIS are the data base, its schema and the application programs (or queries) for data manipulation. Without a GDBMS (or file management system), MIS development tends to be nonstandardized, lengthier, more expensive and more difficult to revise. Aside from generality, an important issue is the flexibility and facility afforded by a GDBMS for capturing and dealing with specific MIS applications. Although both file management and data base management packages are general, the latter are more flexible and easier to use (especially for complex applications). Moreover, there are variations among GDBMS in terms of flexibility and facility.

Flexibility and ease of use are also important for a GPPS and its associated knowledge and language systems. These should ease the task of a DSS administrator in devising, initializing or revising a particular DSS.

There are many flexibility considerations: How severe are the limitations on the language system lexicon? Does the GPPS have the ability to handle models as well as ad hoc retrieval? Recall that problem processor generality implies that there is no restriction on the substance of the models that can be used. However, we can ask what the restrictions are on formulating models and who (or what GPPS mechanism) does the formulating. Is data structuring limited to flat files or is the more flexible, facile network (or extended-network) approach to schema design supported? It is vital for GPPS developers to be aware of such issues.

#### Important Steps

Although full-blown generalized problem processors do not exist today, some software tools can be viewed as important steps in the path toward GPPS. One of these is Executive Information Services (EIS),<sup>7</sup> which is used to develop decision support systems for financial applications. It includes a set of standard financial and statistical models that become a part of any DSS built with EIS. A decision support system

administrator can use EIS to define additional accounting-oriented models for inclusion in a DSS. The EIS language system allows a user to invoke any of the models for execution with desired data.

Structurally, this language system does not vary across the decision support systems built with EIS. Decision support systems built from EIS have the same data structure: a five-dimensional matrix (a very special kind of network structure). Comparable to EIS is Express,<sup>8</sup> a tool for creating decision support systems for financial and marketing applications. A substantial difference between the two is that Express data structuring is in terms of flat files.

Whereas EIS and Express are intended for specific application areas, MDBS-QRS<sup>9</sup> is not oriented toward any particular application. With MDBS-QRS, a decision support system administrator has great flexibility in designing the knowledge system for a DSS. This is because MDBS-QRS interfaces with any schema of the extended-network variety (and thus with network and hierarchical schemata). The MDBS-QRS language system is English-like and

nonprocedural. It allows a user to simply specify the characteristics of a desired ad hoc report in order to automatically generate that report.

Even though the language system does allow a user to utilize some modeling capabilities (by permitting arithmetic expressions and the invocation of descriptive statistical models), MDBS-QRS does not by itself provide the modeling power of EIS or Express. However, its very general ad hoc retrieval capabilities provide a facile method for automatically generating input files for models of any applications area.

The key to achieving problem processor generality is to allow all application-specific information to be isolated into the knowledge system, where it is accessible by a CPPS. With respect to MIS, the generality of a GDBMS is achieved by isolating application-specific data from GDBMS software. We shall refer to this as environmental data, since it typically describes the state of the application system's environment.

The situation is more complex in the case of a GPPS because there are several qualitatively different kinds of application-specific knowledge

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## IN DEPTH

that must be handled. In addition to environmental data, other kinds of application-specific knowledge include procedural knowledge, meta-knowledge and lexical knowledge. Procedural knowledge refers to the collection of application-specific models and/or modules. Meta-knowledge is knowledge about knowledge (that is, knowledge about how to use procedural and environmental knowledge in a given DSS). Lexical knowledge concerns the permissible vocabulary for the language system in a given application.

Because of their different natures, these various kinds of knowledge may very well require different representation techniques and storage mechanisms within a knowledge system. This suggests a number of research issues that must be investigated before a full-fledged GPPS can make its appearance. With respect to procedural knowledge, for instance, there is a need to identify a methodology for coordinated module creation.

Another vital issue is the identification of a language for capturing and representing knowledge about how to correctly use models and perhaps

even about how to formulate models from modules. The GPPS, of course, must be able to interpret strings in this internal language for meta-knowledge and it must be able to take action based upon its interpretations. These, and many other related issues, are examined in *Foundations of Decision Support Systems*, where various techniques from the field of artificial intelligence are suggested as aids in resolving them. The main point is to provide a software tool (GPPS) that allows the facile, flexible creation of artificially intelligent systems (DSS) that support decision making.

#### Conclusion

This article has introduced the notion of a *generalized* software tool for use in building application-specific decision support systems. The characteristics of the proposed GPPS stem from the generic framework of decision support systems. Just as different approaches to GDBMS exist, it is reasonable to expect that different approaches to GPPS will evolve within the broad outlines presented here. It is likely that these approaches will be interdisciplinary, drawing

upon work in such fields as computer science, artificial intelligence, linguistics and management science.

Although it may be premature at present, one should not be surprised to see the formation of a committee composed of DSS users and developers from government, business and academia. This committee would specify a set of GPPS standards which, if adhered to by GPPS developers, would provide a considerable degree of commonality in DSS implementation.

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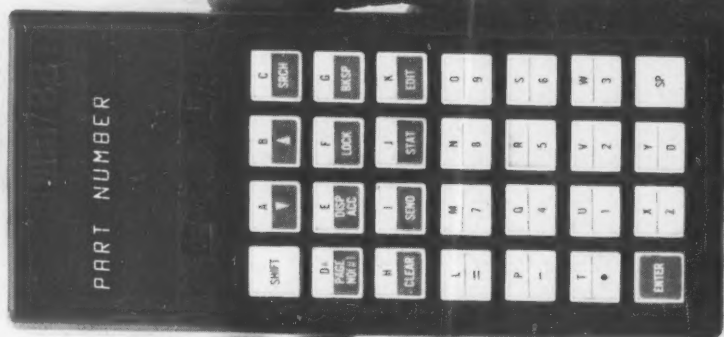
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## Conversion Program Allows IBM's Low-Cost 3101 To Access 3270 Applications

WHITE PLAINS, N.Y. — A protocol conversion program released here by IBM reportedly enables the vendor's low-cost 3101 Ascii CRT terminal to access most application programs written for its 3270 terminals.

The installed user program, which is called the 3101 Pass Through Virtual Machine/370 Support, is said to work with IBM's VM/Pass Through facility with the VM/370 control program. With the conversion program, 3101 users operating in block mode can gain full function support of existing 3270 programs while maintaining the more economical 3101 and teletypewriter communications lines, IBM said.

The software reportedly provides dial-up connection to the VM/Pass Through network, supports 12 program function and two program attention keys and provides simulation of both 3278 and 3277 display stations.

The 3101 Pass Through VM/370 support is available immediately to IBM VM users for a single-use charge of \$170, the vendor said from 1133 Westchester Ave., White Plains, N.Y. 10604.

## Emulog 200 CRT Terminal Underprices D200 From DG

FREMONT, Calif. — A CRT terminal said to be functionally equivalent to — but less expensive than — the Data General Corp. D200 is available from Emulog, Inc.

The Emulog 200 was designed specifically to emulate the D200 and features a sculptured key cap set, green phosphor display, tilting screen and separate numeric keypad.

Another standard feature is a

printer port that operates under program control or from the keyboard. It has two modes: page print of data displayed on the screen and a pass-through operation that allows data from the CPU to bypass the screen and be transmitted directly to the printer, according to a vendor spokesman.

The CRT terminal costs \$1,250 from Emulog at 3730 Yale Way, Fremont, Calif. 94538.

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dumb terminals, how terminals are making computers more responsive to users' needs and guidelines for evaluating terminal equipment.

What trends do you foresee in terminals? How do you configure networks for multiple applications? What's happening with automatic teller machines? The answers to these and other questions can be expressed in application stories, tutorials

## Growth in Computers Bringing Proliferation Of Digital Networks At Lower Cost: FCC

By Phil Hirsch

CW Washington Bureau  
WASHINGTON, D.C. — The number of computers installed in the U.S. has grown from 50,000 to more than one million since 1968; this is a major reason digital communications networks and services are likely to proliferate in the 1980s, the Federal Communications Commission's (FCC) Private Radio Bureau said in a recently issued report.

Not only are a growing number of computers and computerized terminals coming on-line, the bureau explained, but they use components also employed in digital communications systems.

Thus, besides increasing demand for digital networks, computerization is making the means of satisfying that need less costly.

### Viable Service Market

As the number of on-line computers and terminals grows, they create a viable market for new services. The result is a geometric rather than arithmetic increase in the need for digital communications, the report

suggested.

For example, sales of personal computers, which have been increasing at a rate of 50% to 60% per year, have created what the report called "a new industry," represented by such firms as The Source Telecomputing Corp. and Compuserve, Inc. Both specialize in providing on-line data base services to personal computer users. The Source, which entered this field only two years ago, now has 10,000 subscribers.

### Sales Projections

According to the FCC report, personal computer sales are expected to grow at a rate of 37% annually through 1985 at least, with the largest growth being among business users. Introduction of new services, as well as accelerated growth of those already being offered, is likely.

By 1985, the report estimated, five million personal computers will be in use, including about one million with communications capability.

Meanwhile, the Bell system is gradually being digitized.

"Currently, more than one-third of the local and toll-connecting trunks in the Bell system are digital," the report pointed out, adding that these facilities are expected to be almost totally digitized by 1990. Independent telephone companies are undergoing a similar metamorphosis.

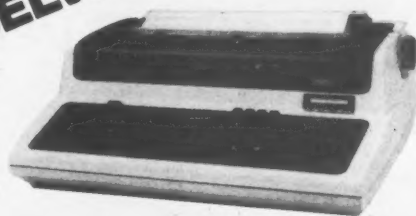
"Over 50%" of Continental Telephone Co.'s trunks are now digitized, the FCC report said, and it is expected that by 1985 this figure will be 80%.

In addition to digitizing its transmission facilities, AT&T is developing improved termi-

(Continued on Page 74)

# COMMUNICATIONS

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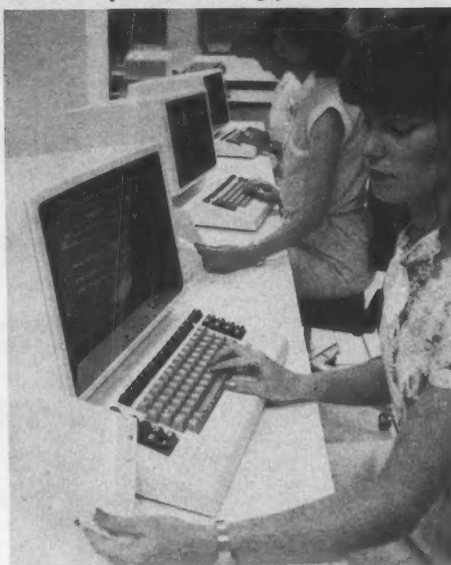
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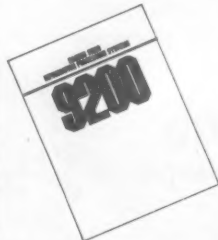
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## TI Unveils Three Options For Silent 700 Terminals

HOUSTON — Three options for its Silent 700 line of data terminals have been announced by Texas Instruments, Inc.

A 136-column compressed print option increases the amount of data that fits on a page by 70% without altering print quality, the vendor

## Device Checks Response Time

SALT LAKE CITY, Utah — Questronics, Inc. is offering a device that monitors, evaluates and prints reports dealing with the data communications link and terminal response time.

The Model 400 is equipped to handle IBM's Binary Synchronous Communications (BSC) and Synchronous Data Link Control (SDLC) protocols. It can examine all transactions on the line, monitoring such parameters as response time, transmit and receive data and more.

The device can be programmed to print reports on specific dates and times with optional resetting of all data collected and can print exception reports based on transactions that have exceeded specific thresholds.

The Model 400 costs \$3,500, Questronics said from 3565 S. W. Temple, Salt Lake City, Utah 84115.

## Acca System Runson Series/1

ATLANTA — A device that enables the IBM Series/1 minicomputer to receive data from asynchronous batch-buffered terminals such as MSI Data Corp., Telxon Corp., Norand Corp., Azurdata, Inc. and more is available from Computer Communications Specialists, Inc.

The Acca Receiving System then allows data to be transferred to another computer or additional processing can be performed on the Series/1.

In addition, the system can receive data on multiple lines, receive data from different terminals or protocols and edit the data using its edit facilities. The system can be autopoll, autoanswer or both.

The base price for the system is \$8,000. A remote job entry option costs \$500 and the autocal option costs \$1,500, CCSI said from 5353 Buford Highway, Atlanta, Ga. 30340.



claimed. The option is suitable for several applications, among them accounting, financial and program and report debugging; it costs \$295.

A 300-ft paper roll accessory kit option increases the amount of time the operator can spend away from the terminal and decreases the number of times the operator must change the paper roll. The cost is \$75.

The paper-out indicator is available on Models 781, 783 and 787 and reduces the possibility of lost data by letting the operator know when the paper supply is depleted. It costs \$25. TI can be reached at P.O. Box 202146, H-596, Dallas, Texas.

## Autoshunt Aids Fault Isolation

ENGLEWOOD, N.J. — Datatec Industries, Inc. has unveiled a device that monitors in-house data communications loops and, when failures occur, isolates inoperative terminals or loop segments and reinstates communications to the computer.

Autoshunt also features an indicator light that flashes during failures and an alarm to notify nearby personnel. The entire process takes place in two to five seconds.

The product costs \$2,500 and up, depending on the number of terminals to be supported, Datatec said from 45 Smith St., Englewood, N.J. 07631.

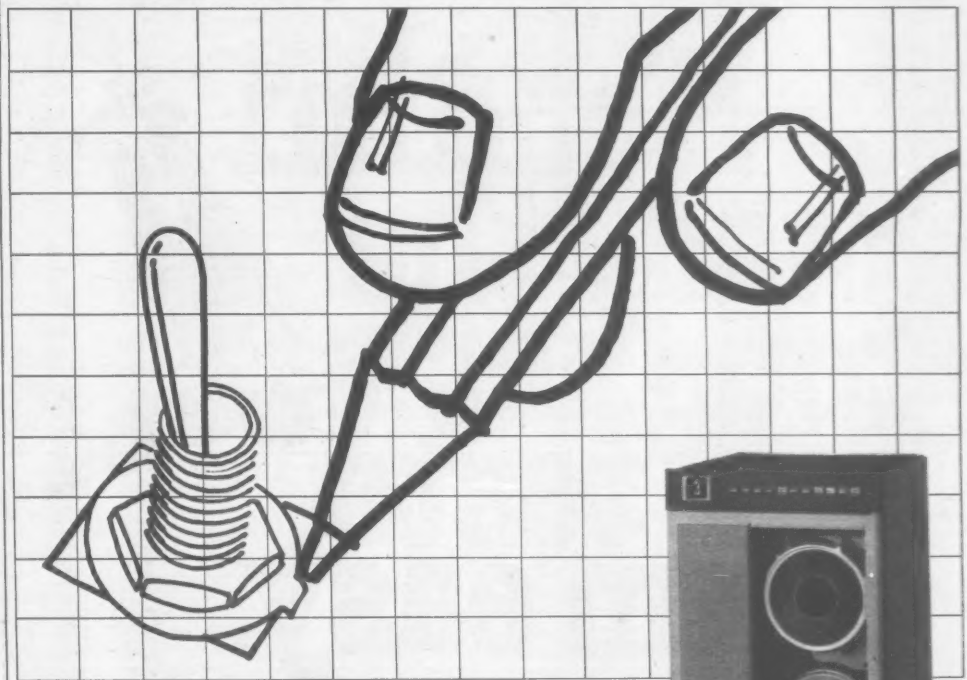
## PSC Printers Get High Speeds

GATHERSBURG, Md. — Printer Systems Corp. (PSC) is offering its full line of IBM 2780 and 3780 plug-compatible read-only printers for operation at 9,600 bit/sec.

This data transfer rate means operation up to 900 line/min can be achieved, depending on the application. The PSC line is said to enhance 2780/3780 terminals with printer capabilities not available from IBM.

The user can choose "component selection" by switch. Choice of Ascii or Ebcidic format is also by switch and the printers can operate in a multipoint or point-to-point mode.

The printer systems start at \$3,995, from Suite 104, One West Deer Park Road, Gathersburg, Md. 20760.



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## Electro Has Link Analyzer

PROVIDENCE, R.I. — A diagnostic tool designed for use at RS-232 or V.24 data interfaces of modems, multiplexers, terminals and computers is available from Electro Standards Laboratory, Inc.

The Model 700 EIA RS-232 Interface Analyzer is inserted in series between the data terminal equipment and data communications equipment to provide access to and monitoring of all data and control signals.

The Model 700 utilizes LEDs to display polarity, activity and validity of all key interface signals simultaneously in red, green and red-green.

The analyzer costs \$275 from Electro at P.O. Box 9144, Providence, R.I. 02940.

## FCC Report Sees Large Network Growth

(Continued from Page 71)

nals. Bell Laboratories recently demonstrated a "digital earphone" that can directly convert an electrical stream of digital pulses into intelligent, audible signals. This device, which fits inside a regular telephone handset, performs digital-to-analog conversion acoustically rather than by conventional electronic decoding hardware. Bell is now performing preliminary research on a corresponding transmitting device — a direct analog-to-digital microphone.

One expert cited in the FCC report — John McDonald of TRW, Inc. — foresees "field trials of key elements" of a totally digital integrated communications network (ICN) this year. He expects the first ICN appli-

cation will occur in the mid-1980s.

Another factor contributing to the growing demand for digital communications facilities is improvement in digital voice encoding technology. "There are indications that some telephone systems will be implementing CVSD as their speech processing technique in the 1980s," the FCC report said.

### CVSD Techniques

CVSD, an acronym for Continuous Variable Slope Delta modulation, needs only 10K to 12K bit/sec to produce a quality replication of the human voice vs. 64K bit/sec for pulse-code modulation (PCM), the system now used by the telephone carriers.

If Bell adopts CVSD, it could lead to a rapid reduction in the related hard-

ware costs, thus removing a major drawback to use of this technology. The reduced bandwidth requirement could make digital voice transmission economically feasible on the digital termination system (DTS) channels that Tymnet and others are planning to build in the nation's major cities beginning next year.

CVSD is one of several digital voice technologies currently under development. Others include adaptive predictive coding and linear predictive coding (LPC), which require even fewer bits than CVSD to produce signals of equivalent quality. For example, the Defense Department is currently using one LPC-based system that converts an analog voice signal into a 2K bit/sec digital signal.

Work is also underway on integrating multiple digital voice signals onto a single channel, using a technique known as digital speech interpolation.

"It appears there will be tremendous improvement in digital voice encoding technology during the next decade with a variety of low-cost, highly efficient systems being developed that can provide good quality [voice] communications," the FCC report said.

One of the other major conclusions of the report, entitled "The Future of Digital Technology in the Private Radio Services," is that "in the land mobile radio services ... the primary factor [influencing] the adoption rate of digital technologies is the demand for data transmission capabilities."

This demand will be determined partly by the growth of the on-line computer population. For, as the report pointed out, "two-way alphanumeric data systems ... are required for computer communications. Also, as more data bases become accessible on-line, they will make new services possible."

"Two-way data systems double or triple the cost of a mobile installation. However ... as the personal computer market develops, many low-cost components [for example, printers, alphanumeric displays, modems] will become available that can be adapted for use in the private services."

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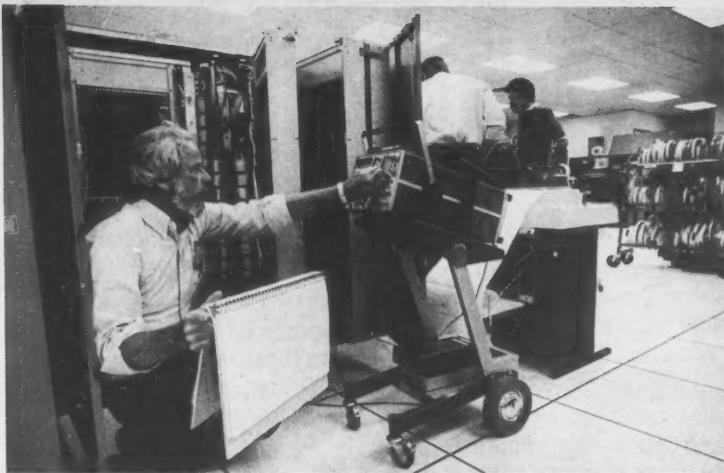


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## Firm Moves DP Across Town, Has System Up in Three Days

Special to CW

AMARILLO, Texas — Some people spend their weekends relaxing at home or soaking up some sun at the nearest beach.

Others are a little more industrious. They use the time to weed the family garden or do some household repairs.

A company here recently decided to put that weekend time to better use by doing a little moving. The company moved its entire data processing system — lock, stock and dual mainframes — clear across town and had it up and running again in less than three days.

Corporate Systems, a company that supplies risk management information systems to one-third of the Fortune 500 companies and a host of other clients, made the move from its old facility to its new headquarters over the last weekend in June. The move did, of course, involve a little more than just packing up a few cardboard boxes and throwing them in the back of a station wagon.

Given the amount of equipment and the complications involved in bringing it online within a three-day period, vendors and customers were understandably skeptical about the chances for the move's success. The equipment that had to make the cross-town shuffle consisted of two National Advanced Systems (NAS) AS/5000 and AS/7301 mainframes, Codex Corp. Model 6000 intelligent terminals, Comten, Inc. modems and other communications equipment, 16 NAS 7350 disk drives and a Datapoint Corp. local controller Attached Resource Computer system used for in-house processing equipment.

Travis Combs, a representative of Codex

in Dallas, expected the company to be down for weeks after shuttling the computers to the new location. And John Cronin of NAS, a man familiar with the eccentricities of the two computers involved in the move, thought that it would at least take five days and possibly more if there were any severe problems.

As it was, it turned out to be "an efficient, fast and very effective move," Cronin said.

### Preparations Started

Preparations for the "Big Move" actually started months before the first computer was unplugged. In early March, Guyon Saunders, president and founder of the company, gathered his staff to map a plan to accomplish the move as quickly as possible without system failure. Vendors for each firm serving Corporate Systems also took part in the planning sessions, as did Southwestern Bell Telephone and officials of AT&T.

One of the first jobs was to make sure that the system's destination was ready to receive its new technological tenant. To accomplish this, telephone representatives installed local duplicate lines and wired the new facility in preparation for the equipment's arrival.

A great believer in "the more the merrier" philosophy, company President Saunders had six NAS technicians on hand to dismantle the CPUs, aid in moving the systems and bringing the equipment back up. Experts were also recruited from each respective vendor to handle the remaining DP and communications equip-

(Continued on Page 77)

## Sojitec System Mixes Graphics, Text Capabilities

By Robert Batt

CW West Coast Bureau

NEWPORT BEACH, Calif. — A data base system touted as the first to combine text and graphics capabilities is scheduled for launch at an aerospace show tomorrow.

The system, known as the SI 3000, is being introduced by Sojitec, a France-based company with a U.S. subsidiary located here. Sojitec specializes in the digital reproduction and management of technical publications.

The SI 3000 consists of a star network of minicomputers — one per location — connected to a main computer via a front end such as an IBM 3705 communications controller. The main computer, usually already installed at the customer site, handles consultation management and updating of the data base.

The number and location of the remote minis depend on the number and physical layout of the consultation terminals with each workstation containing a graphics console enabling an operator to simultaneously view two pages of a document including text and/or illustrations.

The new system will be demonstrated for the first time in the U.S. at the Aerospace Industries Association exhibition in Boston beginning tomorrow; it will be available for delivery in the first quarter of 1982. The SI 3000 was first shown at the Aircraft Maintenance Exhibition in Zurich earlier this year.

Costing about \$50,000 per system, the SI 3000 is aimed at large data base users, particularly in engineering-based industries such as aerospace and automobiles, that require repeated and rapid updating of their data bases.

### Remote Access

According to Sojitec, this latest system enables technical publications such as multiple listing directories, illustrated parts catalogs and maintenance and overhaul manuals to be consulted remotely and in real time using both text and graphics simultaneously. Sojitec claimed there is a huge potential market for such a device because of the increasing sophistication of computer networks throughout large organizations, particularly the large commercial airlines and ground transportation companies.

"For example, General Motors has already indicated it will require 12,000 of this type of system for its spare parts dealers and Ford of Europe, alone, has 10,000 dealers, so we are talking about sophisticated data base users," Ronald Rehak,

(Continued on Page 78)

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Our versatile CRT/printer workstation packages are available in TTY compatible models adaptable for use on a wide variety of systems or applications.

## For Drafting Applications

## HI Unveils Four-Pen Tabletop Plotter

AUSTIN, Texas — Houston Instrument, the graphics division of Bausch & Lomb, Inc., has unveiled a four-pen tabletop plotter designed to fit into drafting, surveying, business and other applications.

The microprocessor-based CPS-16 can produce four-color drawings in sizes from A through D on paper, mylar or vellum. It accepts data from either a standard EIA RS-232C or 20mA current loop data source and

can be operated on-line or in a remote time-sharing environment.

The unit features up to 172 firmware-generated characters containing both upper- and lowercase letters, positive paper feed, circular buffer memory and protocol for detection and correction of data transmission errors. The device also offers a selection of plotting speeds from 10 to 15 in./sec and a resolution of about .002 in.

The CPS-16 is available in two configurations, each compatible with a different type of processor and costs from \$10,900 to \$11,400.

Houston Instrument is located at One Houston Square, Austin, Texas 78753.

## Fifo Buffer Introduced

ATLANTA — A programmable Z80-based hardware spooler, said to accept data or print files from the user's computer and then drive a printer from its own memory, has been announced by Microcompatible, Inc.

The Microcue first-in/first-out (Fifo) buffer is download programmable allowing for such features as poll and select and interfacing to other systems.

Present models have from two to eight ports and from 16K to 32K bytes of memory.

Microcue prices start at \$299 from Microcompatible, P.O. Box 7624, Atlanta, Ga. 30357.

## Firm Moves Entire DP Site

(Continued from Page 75)  
ment and just be there in case of an unexpected emergency.

At approximately 6 p.m. Thursday, June 25, the frantic move began. Within minutes, an army of technicians poured into the Corporate Systems DP Department and began pulling plugs, unscrewing screws and lifting disk drives. The technicians carefully packed the delicate CPUs and peripherals as if they were going on a cross-country rather than cross-town journey, according to John Podrovitz, director of communications services for the firm.

In all, five truckloads of equipment were moved on Friday and two on Saturday.

As soon as a piece of equipment arrived at the new headquarters, technicians there quickly plugged it in, rapidly piecing the system's puzzle back together again. By 2 p.m. Sunday, the entire system was again operational, although it was not used until 6 the following morning when Corporate Systems' business day begins.

There were some minor disk malfunctions and one CPU was not fully tested until that Monday afternoon, but otherwise, the transition was a success. No small feat when you consider the danger involved in shuffling systems from one location to

another, Podrovitz claimed.

Corporate Systems' on-line risk management system is presently connected to about 300 client terminals and is used by the manufacturing, construction, food transportation, petroleum and utilities industries, as well as by the government.

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## Power Systems Now Available

HIGH BRIDGE, N.J. — Function-priced uninterruptible power systems are available from Computer Power, Inc.

Twelve models are available in ratings from 500VA to 25KVA, single-phase and 1,500VA to 75KVA, three-phase. The units reportedly feature sinewave output, long emergency run times, continuous run and high lightning immunity.

Prices start at \$4,248 including 30-min battery power. Computer Power is located at 124 W. Main St., High Bridge, N.J. 08829.

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# System Creates Natural-Sounding Speech Files

By Jeffrey Beeler

CW West Coast Bureau  
SUNNYVALE, Calif. — A system for developing voice output applications reportedly enables users to create natural-sounding speech files in real-time at rates as low as 4,800 bit/sec.

The development system, christened Voiceware, operates with almost any model of host processor and makes

randomly addressable speech files as easy to produce and edit as text files in a word processing station, according to a spokesman for the product's developer, Centigram Corp.

Voiceware also permits its speech recordings to be tested remotely by an on-line host mainframe and then forwarded electronically to end-user workstations in the

field.

Built around a keyboard and video display unit that incorporates a 64K-byte Zilog, Inc. Z80 microcomputer, the system is expected to find especially heavy use in computer-aided instruction, electronic voice mail and similar applications, the spokesman said. The system is also designed to help develop remote data base inquiry services, which allow customers to "talk" interactively with a host processor through their Touch-Tone telephones.

## No Expertise Needed

No programming or technical expertise is required to operate the system, the spokesman said.

To create or modify a speech file, an operator first speaks a prepared message into the system's microphone. Voiceware's digitizer, a Centigram-manufactured product known as Vopac, then converts the speech from analog form into a 4,800 bit/sec digital data stream and transfers the message for storage to the system's voice synthesizer module, which comes with a 32K-byte buffer memory.

Built by Centigram and des-

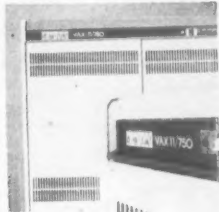
igned Lisa, the single-board voice synthesizer is integrated in the system's intelligent CRT terminal and produces output at the same 4,800-bit/sec data rate as the digitizer, the spokesman said.

After the operator plays back the recorded message to check its quality, the file is edited if necessary, assigned an identification code and stored in either one of two 5¼-in. floppy disk units, each with a 500K-byte capacity. The cost and the amount of disk space involved in storing messages is reportedly minimized by Voiceware's

low rate of data digitization.

A basic Voiceware system incorporating a 64K-byte microcomputer, a CRT terminal, four RS-232C serial interface ports, dual floppy disk units, digitizer and Lisa board costs \$25,000. For an extra charge, the system can also be equipped with a choice of several options, including a 5M-byte Winchester hard disk unit and Centigram's voice recognition system, named Mike.

Voiceware is available now, and product deliveries take 90 days from Centigram at 155A Moffett Park Drive, Sunnyvale, Calif. 94086.



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## Sojitec System a 'First'

(Continued from Page 75)  
company president said.

Robert Roach, executive vice-president, claimed: "With this system we are taking the manipulative powers of computer graphics and graphic art techniques and putting them together in common sense environments to resolve some of the redundancy so prevalent in today's technical publications world."

Roach said one of the key aspects of the SI 3000 is its ability to be compatible with devices of a similar nature. "We are still in the exploration stage since this kind of product hasn't been available before, but we feel it is the answer to those users dealing with volatile information that needs updating quickly."

Roach argued that while

techniques used in the creation, management and reproduction of technical publications had been rapidly oriented toward data processing and computer graphics, the actual consulting of these publications had remained manual — that is, paper, microfilm or microfiche.



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## Low Cost Card Punch and Card Reader for DEC HP DG IBM Computers

The CCC 1700A Key punch interface can connect your computer, time-share terminal, or any bit serial communicating device to an IBM 129 or 029 Key punch so it will both punch and read data cards! It's EIA compatible, converts ASCII or any bit serial code to Hollerith when punching, converts Hollerith to ASCII or any bit serial code when reading, and permits the efficient transfer of data through a 900 character buffer. The 1700A operates at all standard baud rates from 110 to 9600. And it requires no special software drivers; standard Basic or Fortran "PRINT" or "WRITE" statements work just fine!



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## Rather Than Add Second Mainframe Small Firm With Big Concerns Goes Mini

Special to CW

OKLAHOMA CITY, Okla. — The data processing concerns of Reserve National Insurance Co., a small but fast-growing firm located here, are not unlike those of any large Fortune 500-type corporation.

Like executives at most firms that rely on computers for information processing, officials at Reserve National worry about such things as transaction speeds, response times and, of course, whether the company is getting the most DP for its dollar.

So when the firm decided to upgrade its computer system a few years ago to keep pace with its growth, it is understandable that officials quickly rejected the idea of putting in another mainframe to help out its Honeywell, Inc. 2040-A processor. "We figured a mainframe upgrade would cost \$150,000 for hardware alone, and we felt we could get a mini-based system that would do the job and cost less than \$100,000," DP manager Orin Crossley explained.

The minicomputer that Reserve National

installed — a Data General Corp. Eclipse S/130 — is working so well at the 25-year-old company that, in the near future, the company plans to replace the Honeywell system entirely by adding a second Eclipse computer and additional disk storage. All for a cost of about \$20,000, Crossley noted.

The Eclipse currently has 192K bytes of main memory, about 12 terminals and a transaction processing/file handling software system developed by Data Communications Corp. (DCC), a Memphis, Tenn.-based software house. The software reportedly allows concurrent on-line and batch processing for multiple terminal operators and features DCC's Cobol-based index-tree file-handling system, which Crossley described as a "hierarchical data base."

### Cost and Software

Reserve National chose this particular computer system both because of its cost and the software and because it offered the most desirable hardware growth path, Crossley said.

The minicomputer's largest benefit to

the \$15 million company is that each of the firm's three departments — customer service, accounting and claims — now have their own terminals linked on-line to the processor. Before, with just the Honeywell mainframe, customer inquiries and claims were handled in a batch fashion and took at least a day to process. And if a customer did not supply all the necessary information — such as a missing policy number — the process would take even longer.

Since the addition of the minicomputer, 60% to 70% of customer inquiries that do not require hard-copy reports are handled almost immediately over the telephone. Total claims entry time was cut from about 24 hours to 10 hours per day, the DP manager noted.

Presently, the insurance firm is in the process of building a general ledger software system on the DG minicomputer. Once that is in place, the Honeywell machine will be removed, he added. The company is also planning to eventually distribute the computer's processing power to its remote branches.

## Kurzweil Unbundles High-Speed CPU Faster Than Nova

CAMBRIDGE, Mass. — Kurzweil Computer Products, Inc., a Xerox Corp. company, has taken the high-speed processor out of its data entry machine and made it available to business and scientific end users.

In benchmark trials, the Max processor has run as much as eight times faster than Data General Corp.'s Nova III and IV and three to four times faster than Data Corp.'s Point 4 system, previously the fastest Nova-compatible processor, a company spokesman claimed.

The Max processor was unveiled earlier this year as part of the data entry systems package [CW, May 4]. It is said to be able to execute six to seven million instructions per second (Mips). A DG Nova-compatible machine, it reportedly rivals the processing speeds of large mainframes.

Applications for the processor's real-time swiftness include imaging processing, computer-assisted design and manufacturing, high-level language operating systems, process control and large-scale data manipulation, the spokesman said. Typical users would be people who are currently running complex programs in Nova code and are bound by their processor's computational limits, he added.

The Max processor's design is based on emitter coupled logic technology. It consists of three boards containing 258K bytes of 16K-byte random-access memory, a 4K-byte cache memory and logic circuits. The processor's boards take up three of the system's 10 slots, leaving seven available slots for user additions.

Max runs DG's Nova II instruction set and addresses memory in 16K-byte blocks.

The processor costs from \$25,000 to \$35,000, with OEM discounts available to volume purchasers. Kurzweil is located at 33 Cambridge Parkway, Cambridge, Mass. 02142.

## Briefcase-Size Micro Includes CRT, Disk Drives, Keyboard

BOULDER, Colo. — Otrono Corp. has introduced an attache case-size portable microcomputer that features a processor, CRT terminal display, two disk drives and a flip-down keyboard.

Designed for applications that require a microcomputer to move from one spot to the next, the Attache computer weighs less than 20 lb and has 64K bytes of random-access memory. Its dual-floppy disk drives can store up to 360K bytes of data, a spokesman said.

The Z80-based system has a 5-in. nonglare CRT screen that can display 24 lines of 80 char. The CRT terminal's display memory is accessed through I/O commands that do not occupy any of the processor's address space or take up processor time. In addition, the display features a graphics option that consists of 10K bytes of completely independent graphics memory. Both graphics and alphanumerics can be displayed simultaneously, the spokesman stated.

### Virtual Mapping

The system's memory has a virtual mapping feature that allows the software to relocate any 8K-byte real memory segment to any 8K-byte virtual memory location.

The computer's 4K bytes of read-only memory includes automatic start-up diagnostics and machine initialization, a disk formatting program, a disk customization program and general-purpose subroutines for displaying characters, accessing communications ports and utilizing other machine functions, the spokesman continued.

The dual-floppy disk system incorporates single-sided drives, but can be fitted with double-sided units for nonportable activities.

The system is compatible with RS-232C, RS-422 and RS-423 standards, has software-selectable synchronous transmission rates up to 500K bit/sec and software and keyboard-selectable asynchronous speeds up to 19.2K bit/sec. To facilitate communications with other computers, the Attache is capable of synchronous, bisynchronous,

monosynchronous, High-Level Data Link Control, Synchronous Data Link Control and other protocols.

Additional features include a time and date clock and a three-channel sound-synthesis system, the spokesman noted.

Geared mostly for business applications, the system is supplied with Digital Research, Inc.'s CP/M operating system software, enhanced Wordstar and Extended Basic. The USCD Pascal system is also available, and any programs written for CP/M or Pascal can be run on the machine.

The Attache costs \$3,995, which includes three software packages, Otrono said from 2500 Central Ave., Boulder, Colo. 80301.

## Workstation Built For Engineering



Convergent Technologies' Workstation

SANTA CLARA, Calif. — Convergent Technologies, Inc. has introduced a mini-computer-based engineering workstation designed for hardware and software development, laboratory applications and administrative tasks.

The workstation features up to 1M byte of random-access memory and basically consists of a desktop display and detach-

(Continued on Page 80)

MINI-TWORLD

## Price of MPT Series Cut

WESTBORO, Mass. — Data General Corp. has cut prices by up to 11% for its MPT series of microcomputer-based intelligent workstations.

Effective immediately, the MPT/87, with two integral 358K-byte minidiskettes is \$5,250, down from \$5,900. The price for the MPT/83, with one integral 358K-byte diskette, is \$4,600, down from \$5,100. And the cost for the MPT/80, without diskette storage, is \$4,100, down from \$4,600.

All of the above workstations include a 16-bit Micronova microcomputer, 60K bytes of random-access memory, a 12-in. CRT terminal display and an 83-key keyboard. Additional information can be obtained from DG at Rt. 9 in Westboro, Mass. 01581.

## Printek Adds Matrix Printer Line

BENTON HARBOR, Mich. — Printek, Inc. has announced a series of matrix line printers featuring bidirectional print speeds ranging from 170 to 340 char./sec and graphics capabilities.

The Series 900 presently consists of the 910 and 920 printers. Both models feature a graphics density of 144 by 144 dot/in., a 96-char. Ascii set with optional fonts, underlining, superscript/subscript, descenders, double-

width characters and a downloadable character set. Line length is 136 col at 10 char./in. and character sizes range from 10/in. to more than 16/in., a spokesman said.

Standard equipment on both printers includes 1,800 char. buffers for concurrent data receipt during printing, option slots to address future user needs and cater to OEM applications, parallel and serial interfaces and a univer-

sal power supply, the vendor said.

Scheduled deliveries for the printers, which are the first products offered by the less than year-old company, are sometime at the end of this year. The price for the 910 is about \$1,695 while the 920 costs approximately \$2,345.

Printek is located at 1517 Townline Road, Benton Harbor, Mich. 49022.

## Workstation Micro-Based

(Continued from Page 79)  
able keyboard. Up to 120M bytes of Winchester mass storage and electronics is located in a floor-standing module that fits under a desk.

The workstation can be linked together with 15 other systems to form a distributed intelligence network, a spokeswoman said. For central data base access, these clusters can communicate with a mainframe or up-load or down-load large-scale programs.

For hardware development, the workstations offer five IEEE 796 Intel Corp. Multi-bus slots for peripherals and instruments. And for software development, the system offers a text editor, which allows the programmer to edit a text file, and a debugger, which provides a breakpoint capability, single-step execution and other facilities required to debug real-time applications, the spokeswoman continued.

The workstation has five industry-standard programming languages: Ansi 77 Fortran, Ansi 74 Cobol, Pascal and Basic, in addition to the assembly language.

With 128K bytes of memory and 10M bytes of Winchester and 500K bytes of floppy disk storage, the system costs \$22,500 from Convergent Technologies at 2500 Augustine Drive, Santa Clara, Calif. 95051.

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## ELECTRONICS UNDERWORLD

### How Can You Protect Yourself From Smugglers?

By Christopher Simpson  
Special to CW

How can manufacturers protect themselves from smugglers who ship DP equipment to restricted Eastern Bloc destinations?

With simple "risk minimization" techniques, according to one executive who specializes in computer exports.

"American technology is our best export," said Fred Kleinberg, president of F.L. Kleinberg & Co. of Boulder, Colo., "but it has to be controlled. That boils down to a lot of self-enforcement in the industry."

The recent 60-count indictment of Werner Bruchhausen, Anatoli Maluta and two others on export control violations [CW, Aug. 31, Sept. 7] illustrates that the problem of illegal exports is a

serious one, Kleinberg commented. But this should not "turn manufacturers off to exporting."

Exports play a vital role in the business of many electronics manufacturers. A 1977 survey (the most recent available) by the American Electronics Association (AEA) found that \$26.4 billion in revenues of 325 AEA members that responded to the survey came from exports or overseas operations. This sum — which represents more than one-third of all revenues for these companies — contributed a positive \$4.3 billion to the U.S. balance of trade during that year.

"If anything," noted Jim Whittaker, AEA's international affairs manager, manufacturers' dependence upon ex-

(Continued on Page 82)

## Software, Office, Communications Venture Capital Courting Technology

By Robert Batt

CW West Coast Bureau

SAN FRANCISCO — Software, office automation products and telecommunications equipment are the current sweethearts of the venture capital community.

Venture capitalists have traditionally looked for a return on

capital assets that produce a tangible product and have avoided investing in software, where the added value is to be found in the people themselves. However, software is now beginning to attract the attention of some of the top names in the Bay Area venture community.

"Software is a new area that is coming on strongly as far as venture capital is concerned. Historically, there has been a reluctance to put venture capital funds into the software industry because it is so people-intensive," Steven Merrill, general partner in Merrill, Pickard Capital Co., explained.

But as Norman Fogelson, a partner at Mayfield Fund of Menlo Park, Calif., pointed out, new software companies tend to depend on a couple of key designers and "your assets walk out the door every night."

"Putting together a proprietary product and marketing it effectively is the key to success. A product that can be easily duplicated is not one that is attractive to investors. It is hard to take a company with such a product and mold it into a force in the industry nationwide."

In addition to software, many venture capitalists are now also looking for opportunities to invest in companies in the office

(Continued on Page 84)

### What Attracts Venture Capital?

By Robert Batt

CW West Coast Bureau

SAN FRANCISCO — Venture capitalists receive hundreds of applications for financial assistance during the course of a year. What do they look for when they sift through investment opportunities?

- A unique product in a big and growing market.
  - Competitive advantages in price and product.
  - Capability to maintain the product.
  - Sound managerial ability.
- By far the most important item is the caliber of the management team.

A company looking for investors "should have the ability to

be a major company with potential to attract enthusiasm from the public market at some stage," Rick Fluegel of Westven told *Computerworld*. "I feel very good when I find a management team that has plans

stretching 10 years ahead. We are not interested in backing flashes in the pans."

To a venture capitalist, the ideal entrepreneur would be someone with a proven track

(Continued on Page 88)

### Two Companies That Attracted Venture Capital

By Robert Batt

CW West Coast Bureau

Venture capital firms are vying to invest in companies that are on a fast track with products offering technological breakthroughs — companies like Vitalink and Dest Corp. of San Jose, Calif., for example.

Specializing in satellite earth

stations, Vitalink, set up one year ago in Mountain View, Calif., has already received more than \$10 million in venture capital funds. The company is aiming to dominate its market by setting up satellite data networks.

The aim is to bring about a dramatic decrease in the cost of

the technology, so that large corporations that may be able to afford five sites provided by a competitor like Satellite Business Systems could, for a small reduction in capability, make use of 100 stations in a network from Vitalink.

"The breadth of technology

(Continued on Page 90)

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# COMPUTER INDUSTRY

## HP, China Ink Pact For Distributorship

PALO ALTO, Calif. — An agreement to create a distributorship responsible for the sales and service of Hewlett-Packard Co. equipment in China has been reached by HP and the Fourth Ministry of Machine Building of the People's Republic of China.

The distributorship will be an entity within the Chinese Electronics Import/Export Corp. (CEIEC), the foreign trade organization in the Fourth Ministry of Machine Building. In agreeing to the pact,

CEIEC has created for the first time an organization responsible for supporting the products of a non-Chinese manufacturer.

A November opening is planned for the new outfit, which will be located in Beijing. Acting general manager for the firm is Li Deguang, vice-president of CEIEC.

Technical training and management support will be provided by HP under the direction of Chi-Ning Liu, general manager for HP-China, with headquarters in California.

## Ways Suggested to Avoid Dealing With Smugglers

(Continued from Page 81)  
ports "has probably risen since that time."

With that much business at stake, illegal diversion of sensitive exports is bound to be a troubling issue. Kleinberg suggested several steps that can help minimize the problem:

• First, "determine whether goods are for domestic use or export, particularly when

dealing with a new customer." Ask to see a prototype of the equipment in which sensitive components might be used.

### Electrical Standards

"If the equipment is designed to be used at [the international standard of] 230V at 50 cycles, it is pretty obvious that it is not going to be used in the U.S." because the U.S. uses a 120V, 60-cycle standard.

• Ask the exporter or customer to provide a paperwork trail that describes the shipment and final destination of the product.

• Ask the potential exporter to provide Dun & Bradstreet credit ratings or other bank and credit references.

• Ask to see export license documentation. Does the exporter have a valid Export Distribution License or Special Export License that covers the equipment?

• Check to see whether deliveries are to be made to the exporter's business or warehouse. If the shipment is to be drop-shipped to a third party, is there a good reason for handling the product in that way?

• Ask to see the exporter's shipping documents after the export as well. Has the item been shipped to the right consignee? The papers should show a correlation among the original purchase order, the sale confirmation to the overseas business and the shipping documents.

### Potential Customers

In addition, Kleinberg urged consideration of the following questions about a potential export customer:

• Will the customer answer questions about the destination of a product? Is he cooperative?

• Is the exporter technically qualified? Does he understand the equipment?

• Does he personally know his customers?

"The business community plays an important role in the export control effort," William Skidmore, chief of the Office of Export Administration (OEA), observed. Skidmore particularly urges electronics manufacturers to notify OEA of unusual spare parts requests from businesses that are not regular customers.



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## Correction

The Data General Corp. senior vice-president now responsible for the firm's Business Division is Frank P. Silkman, not Frank P. Silverman [CW, Sept. 7]

# DEC, COI Settle Patent Suit Out of Court

Digital Equipment Corp. and Computer Operations, Inc. (COI), a Maryland electronics firm, have agreed to an out-of-court settlement of their long-term dispute in-

volving alleged patent infringement and antitrust violation.

In a joint press release, the two companies cited "the cost of continued litigation

and not any assessment of wrongdoing by either party" as the reason for the settlement.

Neither company would reveal the material terms of the settlement, but noted that all charges against each other had been dropped.

"For its part, Computer Operations has agreed to withdraw its antitrust suit. [DEC], in turn, has agreed not to pursue the patent infringe-

ment suit," the two companies explained in their joint announcement.

In 1974, COI contended that DEC had fraudulently obtained the patent for Dec-tape because it did not reveal the "prior art" of Linc tape, developed at MIT, and because it applied for the patent more than one year after offering the product for sale, which is a violation of patent law [CW, May 1, 1978].

COI subsequently won two decisions from the U.S. Patent Office and the Patent Appeals Board, as well as an early court decision. However, in July, the U.S. District Court of Appeals of Eastern New York overturned the Patent Office's decision [CW, July 13].

This cleared the way for a trial and most likely provided the motivation for the recent settlement.

## Supershorts

Magnuson Computer Systems has initiated a research and development project for the creation of a new IBM-compatible computer system based on very large-scale integration semiconductor technology. The new system is expected to compete in the mid-range mainframe marketplace in the second half of the 1980s.

includes members of the division's present management team.

Comdex, slated to take place in Las Vegas Nov. 19-22, currently lists 522 computer-related companies on its roster of exhibitors.

Calma Co. has donated a computer-aided design system for use in integrated circuit design to the Microelectronic and Information Sciences Center at the University of Minnesota Institute of Technology.

3M Co.'s Micrographic Products Division has created a new department devoted to computer output microfilm and engineering products.

Leasametric, Inc., a lessor of data terminals, has formed a new division, Metric Resources Sales Co., to sell used equipment.

Genrad, Inc. has engaged in discussions regarding the possible acquisition of its Development Systems Division by a group of investors that

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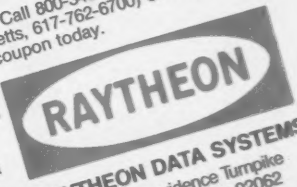
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## Executive Corner

- Kenneth R. Anderson has been named president and chief executive officer of Xtel Corp.
- Frederick J. Trudo was recently appointed chief executive officer of Xycom, Inc.
- Eddie L. Ketterman has joined Performance Software, Inc. as vice-president of sales.
- J. Lee Ledbetter has been elected vice-president and controller of AM International, Inc.
- Richard Kief has been promoted to vice-president of marketing at Lambda Semiconductors, a division of Veeco Instruments, Inc.
- Albert C. Kibbler has been named vice-president and general manager of Micro Switch, a Honeywell, Inc. division.

- Leonard W. Tuft has been appointed vice-president of operating arrangements at RCA Global Communications, Inc.
- MSI Data Corp. has announced the appointment of Richard S. Rager as vice-president of engineering.
- Mark D. Lewis has been appointed vice-president of sales at Micro Five Corp.
- William O. Fordiani has been named to the newly created position of vice-president of marketing at Datapower, Inc.
- General Electric Credit Corp. has appointed Norman P. Blake Jr. executive vice-president of financing operations. Gary C. Wendt has been named vice-president and general manager of the commercial and in-

dustrial financing division of that firm.

- Christopher Spencer has been named vice-president of marketing of the Computer Systems Division at Commodore Business Machines, Inc.

- Ira M. Marks has been promoted to the newly created post of vice-president of business planning and development at Benson, Inc.

- Barry K. Berghorn has been named vice-president of marketing and sales for the computer division of Atari, Inc.

- Jim Diller has been named to the post of vice-president and group director of MOS integrated circuits in the Semiconductor Division of National Semiconductor Corp.

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## Three Markets Now Attracting Venture Capital

(Continued from Page 81)

automation and telecommunications fields as those technologies begin to converge.

Denman Van Ness, vice-president at the investment banking firm of Hambrecht and Quist, expressed the general attitude. "We see a lot of technology converging in the office automation environment, but right now it is hard to see what that office is going to look like.

"For example, we see the whole of the telecommunications industry undergoing quite a bit of change with regard to both voice and data. This breeds product and company opportunities in a whole host of different areas such as private automatic branch exchanges handling voice and data," he said.

"To the extent that people can develop standards for communications that allow interoffice systems to work, then there is a good chance that a company can develop one component that will fit into that system and develop a market niche, for example, as with Ethernet," Van Ness added.

### Dest Investment

Several prominent venture capitalists including Hambrecht and Quist and Merrill-Pickard, both of San Francisco, Mayfield Fund of Menlo Park, Calif., and Charles River Partnership of Boston have invested funds in Dest Corp., a San Jose, Calif.-based manufacturer of optical character recognition page reader systems.

One investor said: "We feel products such as these, as they come down in cost, will revolutionize the integrated office environment and we want to have a stake in it."

Another area where venture capitalists are beginning to put their money where their mouths are is in the area of satellite communications.

"Satellite communications and improved earth stations for data handling are big areas that have a long way to go. Some day we think computers will treat earth stations in the same way they treat files. In other words, earth stations will function like computer peripherals. We think that is coming and we intend to play the market aggressively," observed Thomas Perkins of Kleiner, Perkins, Caulfield & Byers.

As a result, the firm has invested in a new enterprise — Vitalink — formed out of Stanford University with the aim of developing inexpensive earth stations to operate as computer peripherals.

"There is a lot of risk working on new technology to bring up, say, a tenfold reduction in the cost of earth stations, but if we are right then we will be the dominant force in an emerging market sector, and that's how you make money," Perkins said.



'Bet the New Micros Have Arrived.'

## Scopus Accused Of Violating Randomex Patent

LOS ANGELES — A California-based supplier of removable disk maintenance equipment has sued one of its former sales agents for allegedly unauthorized use of the plaintiff's patented disk-cleaning apparatus.

Randomex, Inc., which filed the suit in federal district court here, has accused Lowell, Mass.-based Scopus Corp. of patent infringement and seeks a permanent injunction barring the defendant from further use of the plaintiff's disk maintenance equipment.

Randomex also seeks an unspecified amount of damages as compensation for the profits it has purportedly lost as a result of Scopus' alleged infringement.

An accounting will have to be made before the exact extent of the plaintiff's damage claim, which would be automatically trebled, can be determined.

Headquartered in nearby Signal Hill, Randomex provides a preventive disk maintenance service through its wholly owned Data Maintenance, Inc. subsidiary. In 1972, a year after its founding, the parent company appointed Scopus, then a newcomer to the disk cleaning and maintenance field, as one of its authorized sales representatives.

Three years later, the agreement between the two firms ended, at which point Scopus developed and began marketing an automatic disk-cleaning apparatus similar in appearance and design to Randomex's, the suit alleged.

Scopus' alleged violation of Randomex's patent has already "greatly damaged" the plaintiff and threatens to inflict "irreparable" harm if the purported infringement continues, the suit contended.

## New Companies

**World Computer Works, Inc.** is a new service organization that installs and removes IBM equipment and peripherals. It is based at 502 Winthrop, Addison, Ill. 60101.

Two former Burroughs Corp. executives, Robert Besette and Joseph Burns, have formed a computer products and service marketing firm called **Software Promotions, Inc.**, headquartered in Fort Wayne, Ind.

**Metamedia Systems, Inc.** has been established to provide services in the production of materials for use in videodisk applications. The outfit is based at 2010 Century Blvd., Germantown, Md. 20767.

The **Marcus Agency** has officially opened its doors to offer advertising and marketing services to the information processing industry. It is located at Suite 2102, 333 W. 86th St., New York, N.Y. 10024.

**Advanced Software Technology, Inc.** is a new firm providing consulting and programming services to IBM system users. The company is based at 325 Angell Road, Lincoln, R.I. 02865.

## Charging Theft of Trade Secrets

# Ven-Tel Files Suit Against Former Workers

SAN JOSE, Calif. — A local manufacturer of modems and other data communications gear recently brought a \$15 million suit charging trade secrets theft against a group of its former employees who recently left the firm to form their own organization.

Filed in Santa Clara County Superior Court here, the suit seeks \$5 million in general damages and \$10 million in punitive and exemplary damages from Tek-Com, Inc., which stands accused of unauthorized possession of a competitor's proprietary engineering designs and drawings.

The suit also seeks a permanent injunction barring Tek-Com from further use of the documents, which

contain the "blueprints" and technical data for a Bell 212-compatible modem developed by Ven-Tel, Inc.

Tek-Com's alleged possession of the designs and drawings constitutes a "misappropriation of [Ven-Tel's] trade secrets" and forms part of a "conspiracy to injure and interfere with" the plaintiff's 212-compatible modem business, according to the suit.

Estimated to be worth at least \$250,000, the documents in question reportedly give Ven-Tel a competitive edge in its chosen field of endeavor. But that advantage could be "adversely affected," the suit said, if Tek-Com were allowed to convert the disputed blueprints into a finished product.

ished product.

At one time or another, all the defendants named in the trade secrets theft suit worked for Ven-Tel. When the latter resigned from the Santa Clara, Calif.-based firm to go into business for themselves, the defendants took some of their ex-employer's proprietary technology with them, the complaint alleged.

Last April, the Tek-Com principals allegedly tried to produce printed circuit board designs and assembly drawings based on schematics originally developed by Ven-Tel. The defendants also tried to recruit a Ven-Tel circuit designer to do their printed circuit board layout, the suit charged.



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CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

TELEPHONE \_\_\_\_\_

Number of terminals installed \_\_\_\_\_ 3277 \_\_\_\_\_ 3278 \_\_\_\_\_

Send to Bob Early, DTSS, Incorporated, 10 Allen Street, Hanover, NH 03755 Telephone (603) 643-6600

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You can be there as our specially picked panelists discuss a broad range of industry and business topics and tell you:

- How to build an organization
- How to develop your sales force
- How to analyze your competition
- How to handle first-time users
- How to satisfy your customers
- How to protect your margins
- How to spot a trend
- How to avoid the pitfalls
- How to plan for growth

You can also participate in a wide spectrum of Workshops at THE OEM BUSINESS FORUM and learn more about network configuration, sourcing software packages, design trade-offs in small systems, legal problems and solutions, applications dynamics, new markets, Europe and Japan, and much, much more!

In addition, you'll hear the very latest that's happening at DEC, DG, TI, IBM and HP at a series of Watch Workshops spotlighting key executives from these major manufacturers. (And you'll have plenty of time for questions!)

What's more, at THE OEM BUSINESS FORUM, you can listen to some of the leaders in the OEM marketplace, speaking on a variety of topics vital to your future in this business. (For a look at some of the speakers in store for you, see the listing in this advertisement.)

### No ordinary conference

The OEM BUSINESS FORUM is an extraordinary gathering of the industry's executive class. The first FORUM was attended by nearly 500 people, including 116 presidents and CEOs, 88 vice presidents, 67 marketing directors and several-dozen consultants, market and business planners. Among the initial selection of *speakers* for this second FORUM are: 18 presidents, 10 vice presidents and 11 marketing and product managers. More will fill out the roster for the 35 intensive sessions. The FORUM presents a unique opportunity for key people like you, in the computer industry's fastest growing sector, to meet and share problems and solutions.

## October 5 (Day 1)

8:45-9:15 **Keynote**

A-1

9:15-9:45 **Coffee Break**

9:45-10:45 **Mini & Micro-Based OEM Business Update**

A-2

- I. Starting and Staying in Business
  - a. Business structure.
  - b. Financing.
  - c. Successful business plan.
- II. Economic Forecast
  - a. Reagonomics.
  - b. Boon or bust.

9:45-10:45 **The Magic of Sales**

A-3

- a. Organizing the operation.
- b. Qualifying and hiring a sales force.
- c. Defining sales objectives.
- d. Prospecting customers.
- e. Motivating a sales force.
- f. Closing a sale.

11:00-12:00 **OEM Survival Tools for the 1980's**

A-4

The survival of an OEM depends upon the firm's ability to make a consecutive series of complex market decisions concerning what market segments to pursue, what product features to include and what sales strategies to employ. Many companies run into difficulties because these crucial decisions are opinion based rather than data based. This session introduces a number of simple, practical tools that every OEM can employ to more astutely analyze the marketplace and respond to its ever-changing demands.

11:00-12:00 **Acquisition and Diversification**

A-5

- Mergers and acquisitions: the viable alternative to corporate growth.
- a. The pros and cons of merger vs. going public.
  - b. Why a company should consider merger and/or acquisition as a sound way to grow.
  - c. How to properly plan an orderly merger/acquisition program.
  - d. Why mergers/acquisitions help make a company more competitive in the marketplace.

12:00-1:30 **Luncheon**

1:30-2:30 **Influence of Growing Local Networks (Part I)**

N-1

- a. What's hot and why.
- b. Where are we headed & what's the time frame?

2:45-3:45 **Influence of Growing Local Networks (Part II)**

N-2

2:45-3:45 **Intelligent VDTs and Desk-top Systems**

N-3

- a. Impact as net elements.
- b. Distributed data bases.
- c. Can we do without a mainframe?

1:30-2:30 **Input/Output: Market & Technological Structures**

T-1

- a. Printers.
- b. CRTs.
- c. Color graphics, hardware, software.

2:45-3:45 **Mass Magnetic Memory: Market & Technological Structures**

T-2

- a. Overview & future trends.
- b. Floppy, Winchester & other disk memory.
- c. Streamers vs. start-stop tape drives.
- d. 64K bit/chip and beyond.

4:00-5:00 **Voice I/O and Other Analogue I/O: Market & Technological Structures**

T-3

- a. When do benefits equal cost?
- b. Architecture examples.

1:30-2:30 **Retail Outlets**

O-1

- a. What's the outlook?
- b. Will the big boys dominate?

2:45-3:45 **Are You Ready for an Ad Agency?**

O-2

- a. Make or buy criterion?
- b. Agency selection.
- c. How you and your agency can best work together.
- d. Where can consumer-level tactics work?

4:00-5:00 **OEM Agreements**

O-3

- a. Franchise fees.
- b. Sales territories, distribution rights.
- c. Quotas, credit, payment.
- d. Second sourcing protection.

1:30-2:30 **Application Generating Tools**

S-1

- a. Benefits of "user friendly" systems.
- b. Increasing profits and productivity through the use of application generators.
- c. Developing and marketing a system with an application generator as the nucleus.

2:45-3:45 **Software Management Strategies**

S-2

- a. Value added software development.
- b. Documentation: Gaining a multiplier for software support.
- c. Transportability: Controlling competitive influences.
- d. 24 ways to improve turnkey software.

4:00-5:00 **Application Dynamics: Planning for Changes**

S-3

- a. Processor independent transportability.
- b. Compatibility for expansion.
- c. Holding down maintenance overhead.

1:30-2:30 **Microcomputer Trends**

P-1

- a. 8, 16, 32-bit processors.
- b. Trade-offs & time frame.
- c. The effects of plummeting costs on high-level processors & high-capacity memory chips.
- d. The near-term system of the future—32-bit micro & 256K-bit RAM chips?

2:45-3:45 **Legal Aspects of the Third Party Market**

P-2

- a. Legal aspects of OEM vendor arrangements from both the manufacturer and OEM perspectives.

- b. Manufacturer, distributor, dealer, rep., final customer, who can get burned the most and what degree of protection is possible.

4:00-5:00 **Desk-top Computer**

P-3

- a. Struggle for the right niche in a viper's nest of competition.

1:30-2:30 **IBM Watch**

C-1

2:30-2:45 **Coffee Break**

2:45-3:45 **HP Watch**

C-2

4:00-5:00 **TI Watch**

C-3

## October 6 (Day 2)

8:30-9:45 **Japanese Vendors "Meet the Press"**

B-1

Four Japanese vendors will be interviewed by editors from leading computer newspapers, business publications and financial journals about the growth of Japanese firms in the U.S. domestic markets.

9:45-10:15 **Coffee Break**

10:15-11:15 **Software: The Growth Area of the Decade**

B-2

- a. Market strategies.
- b. Managing software projects: If you can't plan it, you can't do it.

10:15-11:15 **Financing Your Business and Product Development**

B-3

- a. How much money is needed to start and stay in business? Profomas?
- b. Forecasting/budgeting.
- c. Working capital/venture capital.

11:30-12:30 **Sales & Marketing Planning**

B-4

- a. Main goal & objectives.
- b. Common errors.
- c. Key account strategies.
- d. Distribution channel considerations.
- e. External & internal organizational structures.

11:30-12:30 **The Service Alternative**

B-5

- a. When does free consulting and service become a profit killer?
- b. The OEM and the service questions. Is there a service requirement? Advantages and disadvantages to the OEM. Methods available to accomplish/solve service requirements.

12:30-2:00 **Luncheon**

2:00-3:00 **Europe as a Market**

M-4

- a. Are you ready?
- b. Is Europe ready for you?
- c. Effective channels of distribution.
- d. Marketing philosophies among countries.

3:45-4:15 **Beyond the European Market: The Next Step?**

M-5

- a. Best bets.
- b. Update on the market.
- c. Channels of distribution.
- d. Maintenance and service.





# THE OEM BUSINESS FORUM

## Register now! October 5th and 6th, 1981 The New York Hilton New York City

### Featured Speakers Include:

- A-1** Al Lay  
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### U-4

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Data General
- Richard R. Farwell  
*Dir. Mktg. Support*  
Small Business Sys. Div.  
Data General
- Watch Computer Business  
News for new speakers  
as they are added.

- 2:00-3:00 **PR: The Unified**  
**U-4 Corporate Philosophy**  
a. Agency selection.  
b. Developing the plan & positioning the product.  
c. Press tours/conferences.  
d. Releases.  
e. Editor contact & the importance of personal involvement.
- 3:15-4:15 **Office Automation: One**  
**U-5 Stepping Stone Beyond WP?**  
a. Overview and future trends.  
b. Strategies and techniques for OA equipment sales.
- 2:00-3:00 **Special ADAPSO Session**  
**P-4**
- 2:00-3:00 **Sourcing Software**  
**S-4** a. An overview of the problem in today's market.  
b. Make or buy? Realistic estimating of costs.  
c. Evaluating packages for resale.  
d. Evaluating a custom software house.
- 3:15-4:15 **Watering the Software**  
**S-5 Desert**  
a. Potentials of dealing with software publishing houses.  
b. Alternatives in distributing software. Computer manufacturer programs to classified ads.
- 2:00-3:00 **DG Watch**  
**C-4**
- 3:15-4:15 **DEC Watch**  
**C-5**

### "SPECIAL EARLY BIRD SESSION"

October 6, 1981  
7:45 - 8:30 AM

### "INVESTING IN THE OEM INDUSTRY"

Frank Kline  
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Just fill in, detach and mail your Registration Form today to THE OEM BUSINESS FORUM, c/o Computer Business News, 375 Cochituate Rd., Box 880, Framingham, MA 01701. Or call TOLL-FREE 1-800-225-4698 (in Massachusetts, call collect 617-879-0700) and ask for Louise Myerow, Registration Coordinator.

The fee per person: \$345, and you can charge it to your American Express, VISA or MasterCard account.

### Registration Information

Cost is \$345 for two full days of sessions and lunch each day. There will be a \$50 service charge for cancellations after September 28. Registration may be transferred at no charge. Contact the New York Hilton directly for hotel accommodations; call 212-586-7000, and mention you'll be attending THE OEM BUSINESS FORUM.

### Registration Form

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1-800-225-4698  
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I'm in the market. Please sign me up for THE OEM BUSINESS FORUM to be held at the New York Hilton at Rockefeller Center. I understand that the conference fee is \$345 per person.

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### A. Product/Industry. Please circle ONE only.

- 10 Systems Integrators/Systems Houses
- 20 Software/Service Vendors
- 30 Multi-Quantity End Users
- 40 Manufacturers of Computer Systems or Peripherals
- 50 Manufacturers of Office, Business, Personal and Consumer Systems
- 60 Hardware OEMs
- 70 Distributors/Dealers/Retailers
- 80 Consultants
- 90 Other (Specify)

### B. Title/Function. Please circle ONE only.

- 10 Corporate Management
- 20 Operations Management
- 30 Software Development
- 40 Engineering
- 50 Marketing
- 60 Consultants
- 70 Researchers/Educators
- 90 Other (Specify)

### C. Size of Organization (no. of employees)

- A. Under 100 B. 100-499
- C. 500-999 D. 1,000-4,999
- E. Over 5,000

### D. How did you hear about the OEM Business Forum?

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## Nickels & Dimes

NCA Corp. has made an initial public offering of its common stock, some 570,000 shares, at \$15 per share. \$\$\$

Pecept, Inc. has completed a second round of financing totaling \$2.5 million. The new funds are being used to back all facets of the company's operations, including an expansion into larger headquarters in Waltham, Mass. \$\$\$

Compuscan, Inc. has completed a definitive agreement with Olivetti Realty N.V., an affiliate of the Olivetti Group of Italy, resulting in a \$501,000 cash investment in Compuscan. \$\$\$

Two venture capital firms, Path-

finder Venture Capital/fund and United Capital Corp. of Illinois, have completed an equity investment of \$600,000 in Central Data Corp. of Champaign, Ill. \$\$\$

The American Stock Exchange has approved for original listing over six million common shares of The Ultimate Corp. of Clark, N.J. \$\$\$

Harris Corp. has declared a 10% increase in the quarterly dividend, raising it to 22 cents per share, payable Sept. 18 to shareholders of record Sept. 8. \$\$\$

Directions, Inc., a Dallas software firm, has sold a 40% interest in itself to Dallas entrepreneur Sam Wyly.

## Caliber of Management Important to Investors

(Continued from Page 81)  
record, successful in his current job — typically a manager with a lot of responsibility in a big company.

"We are looking for a quality management team above everything else. What we want is breadth and depth and so it is necessary to be able to put together a well-rounded business team," Norman Fogelson, general partner in Mayfield Fund of Menlo Park, Calif., said.

What this typically means in practice is a chief executive who has demonstrated leadership potential backed up by talented marketing, manufacturing, finance and technical executives.

"So often we see a technical team which doesn't have the management expertise to build and run a business. A research Ph.D., for example, trying to go on his own is unlikely to get funded," Fogelson added.

Often would-be entrepreneurs seeking financial backing are asked to submit a business plan including a general outline of the company strategy, an analysis of the market it plans to enter, the unique qualities of its product offerings and technical and financial projections.

"Basically what we are looking for is evidence that management has thought the process out; that it really knows what it is doing and knows how its technical team is going to accomplish the plan. After all if you are going to give these guys a million dollars or so, you need to have confidence in them," Fluegel explained.

Apart from the business plan, the venture capitalists usually make their own independent assessment, including a reference check on the chief executive and senior managers of the company looking for funds. The market for the proposed product is also analyzed by talking to potential customers or hiring outside consultants. The idea is to ensure that the company's proposed time frame and financial structure is viable.

### Initial Discussions

In dealing with a start-up enterprise, discussions are usually conducted through a lead venture capitalist who will do the negotiating and attempt to raise money with other venture capitalists if required.

Many venture investors will attempt to reduce risks by looking for a company to market a product for which there is a known market and that is a logical extension of existing technology. Westven is an example of such a business philosophy.

However, other companies such as Kleiner, Perkins, Caulfield & Byers, are more prone to high-risk statements. Thomas Perkins, general partner in the firm and a former Hewlett-Packard Co. executive, said, "We tend to specialize in high-technology start-up ventures where the biggest capital gains can be made and also the biggest losses.

"Our philosophy is to get into a deal very early with a company that can dominate a market segment." One of Kleiner's most striking successes was with Tandem Computer, Inc. with the venture capitalist making one of their number — Jim Treybig — chief executive of the new company.

It is the lure of successes like Tandem that has led venture capital firms to increase their participation in the computer industry over the last few years, and nowadays investment deals are concluded at an astonishing pace, three months being the typical negotiation period.

As one venture capitalist put it: "The computer industry is one of those industries that accepts new ideas. If you have a better product than currently exists, you can sell it. In this sense, the industry has a tremendous amount of growth in front of it before it reaches maturity."

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## Contracts & Pacts

Cullinane Database Systems, Inc. has signed a formal agreement whereby it acquires nonexclusive marketing rights to the General Ledger Plus computer software package developed by McCormick & Dodge Corp.

Western Union Telegraph Co. has received an \$8.4 million contract from the General Services Administration to enhance the communications capability of the agency's advanced record system.

BASF Systems Corp. has signed OEM purchase agreements totaling more than \$11 million for its 6170 Series of 8-in. fixed disk drives. Among its customers are The Braegen Corp., Philips Data Systems, Inc., Point 4 Data Corp., QI Corp. and Xylogics, Inc.

Printacolor Corp. has signed a long-term agreement to supply its color graphics printing mechanism to Omnicolor.

Decision Data Computer Corp. has signed a \$12 million leasing agreement with Phoenix Leasing, Inc., by which Decision Data will sell to Phoenix Leasing equipment rented to end-user customers for one, two or three years.

Computer Sciences Corp. has received a contract from the National Aeronautics and Space Administration for continued technical support at the National Space Technology Laboratories. The \$8 million one-year contract includes options for four annual renewals.

Minicom Systems, Inc. has renewed its contract with Dysan Corp. to purchase additional disk packs and cartridges over a four-year period.

Anacomp, Inc. has entered into an agreement with Storage Technology Corp. (STC) to design, film and distribute STC's service documentation on microfiche to its nationwide network of 300 field service engineers.

Computer Sciences Corp. has received an \$8 million U.S. Army contract for analysis of the effectiveness of guided missile systems under battlefield conditions.

Kennedy Co. has been awarded contracts totaling \$1.4 million for its Series 9000 and 9700 tape transports and formatters.

## Orders & Installations

ITT Courier Terminal Systems, Inc. has received an order from the Data Processing Department of Harris County, Texas, for 120 terminal products. The contract is valued at \$225,000.

Atlantic Richfield Co. has awarded Harris Corp. three contracts totaling \$6.5 million to design and build a private satellite communications network linking the oil

company's facilities in Philadelphia, Dallas, Denver, Los Angeles, Anchorage and Produhoe Bay, Alaska.

The Citizen's and Southern National Bank of Atlanta has signed a \$4.9 million contract to install Bunker Ramo Corp.'s Bank Control System 90 terminals and minicomputers in 126 banks and affiliated offices throughout the state.

Petrolane, Inc. has ordered Raytheon Data Systems Co.'s PTS-2000 terminals in its accounts payable and wholesale departments.

The Atchison, Topeka and Santa Fe Railway Co. of Chicago has placed orders for two large-scale computer systems, the Univac 1100/84 and 1100/82, valued at more than \$18 million, from Sperry Univac.

Ralston Purina Co. has selected Cado Systems Corp. as the supplier of its computer-based accounting systems for its entire dealer network.

Scan-Data Corp. has reached an agreement in principle with Hardee's fast-food chain, under which Hardee would purchase and install Scan-Data's point-of-sale systems, Positran II.

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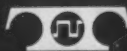
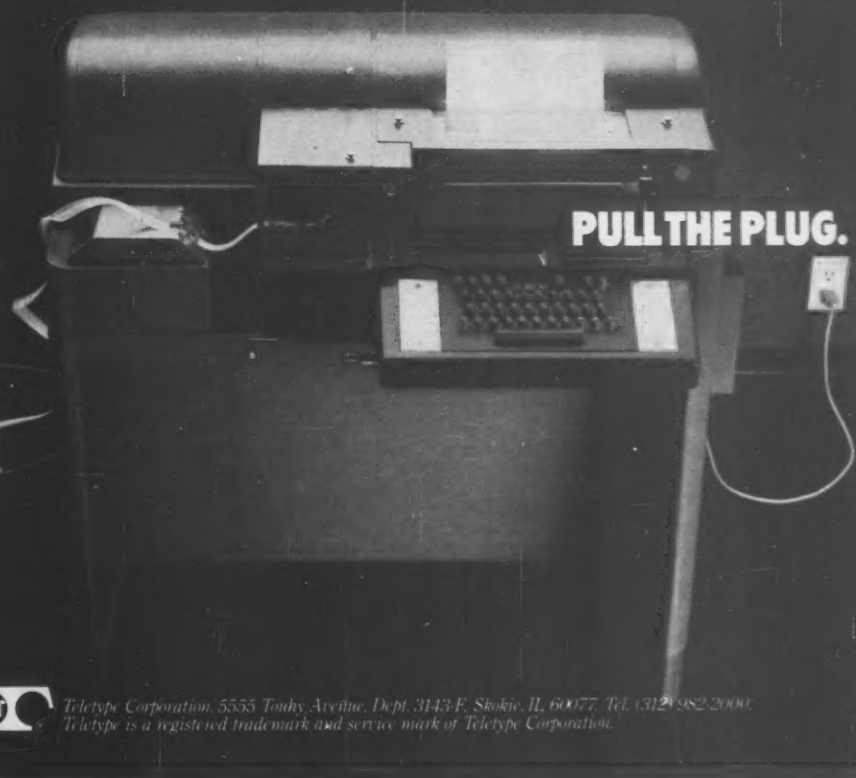
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## Vitalink, Dest: Two Companies That Attracted Venture Capital

(Continued from Page 81)

we have attacked is larger than any other start-up venture I know of in terms of software, networks and solid state. In that sense this is a very ambitious project," Albert Horley, Vitalink's president, said.

"In terms of attracting venture capital finance, the quality of the idea and the management team we were able to put together made the difference as to how much money we could get. It is our impression that venture capitalists have been looking to make an investment in this field for quite some time," he added.

Apart from Horley, a director of communications policy at the former Department of Health, Education

Welfare, the other founders of the company, James Janky and Steven Russell, have had extensive experience in the field of satellite communications technology.

To this team, Horley added a vice-president of marketing who was a former deputy director of the Office of Telecommunications Management, a vice-president of operations who was a senior executive at Atari Computer Systems, Inc. and a vice-president of finance who used to work for Stanford Telecommunications, Inc.

"The quality of the venture capital firms who participated with us enabled us to pull the top people out of key jobs in large corporations," Horley added.

One of the newest entries into the fast-growing market for optical character recognition (OCR) page reader systems, Dest has received substantial venture capital backing from firms such as Hambrecht and Quist, Merrill-Pickard and Mayfield Fund.

The company aims to make available OCR systems that can read most common type styles in varying formats to a degree that currently is not available.

### Product Announcements

In June, the company announced a series of three page processor products. Users, it claimed, can choose from among an entry-level system that transmits text to a word processor in applications where document formats are consistent, to a top-of-the-line system designed for offices with multiple communications requirements where documents in a variety of type styles and formats are processed.

In 1980, Dest's sales totaled about \$1 million and the company expects its new product range to lift this figure to \$4 million this year. In fact, it expects sales to double each year from 1982 to 1985.

"We have the capability to deliver over 26 types of type styles to customers, and so we believe that despite being the smallest company in the market we have established a product leadership," Rick Amen, Dest's president, commented.

"The total word processor market, including both display and printers-only types of equipment, is forecast at over \$4 billion by 1984 and our objective is to become a \$50 million company by 1985."

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### Carlisle and Watteuw on Office Information Systems

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### Barry Boehm on Software Engineering Economics

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### Markov and Piatkowski on SNA

SNA is the strategic direction for a large segment of the computer industry. It is an ever-evolving communications architecture which addresses bit transportation functions and the dialogue disciplines that enable a meaningful communication among diverse units. James Markov and Thomas Piatkowski, two of the key architects of SNA, provide an understanding of its concepts, rationales, formats, and protocols of SNA. This creates a logical foundation for distributed data processing systems and a communication architecture that is easily applied.

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November 30-December 2, 1981



### Popek and Kline on Integrated Distributed Systems

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Sunnyvale — November 9-11, 1981



### Shoch, Roberts and Weir on Local Data Networks

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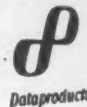
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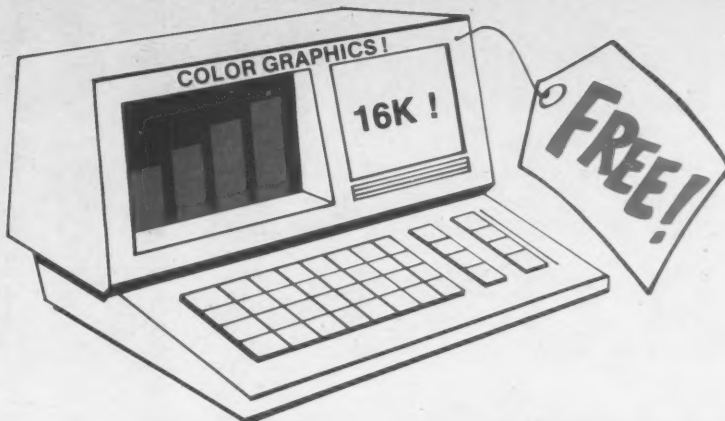
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To encourage good response to our recruitment effort, Fred Williams Associates, Inc., will give free of charge a computer as described below to any applicant who is hired through Fred Williams Associates, Inc., in the next twelve months as a result of responding to this ad. You must respond within 30 days of this publication date by sending your resume (handwritten OK) along with the attached coupon completed or a photo copy of the coupon. Of course, total confidence will be maintained.

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FWA, Inc., will provide only the system described in this paragraph with delivery being made within sixty days after beginning a new employment through FWA, Inc. The computer we offer is a major manufactured 8 Bit Processor that includes CPU/keyboard with 16K RAM using Level I Basic, video interface for your TV, power supply, manual, and a game cassette.

Note: This system is expandable (not included) to 48K RAM with Level II Basic with printers, floppy disk, driver, and many software packages available for you to purchase easily at hundreds of outlets throughout the U.S.

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**McDonnell Douglas Technical Services Company** at Kennedy Space Center has immediate openings for analysts to support pre-launch test and light computer operating systems, scientific application software and to perform related activities. A minimum of three years' experience in software systems analysis and a Bachelor of Science degree are required. Experience with military software development standards and procedures is highly desirable.

Find out now what we can offer you! Send a brief summary of your education and experience to:

**McDonnell Douglas Technical Services Co.**  
Attention: Personnel Department  
P.O. Box 21233; R1430  
Kennedy Space Center, Florida 32815

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We at Roddy & Associates represent, as clients, a broad spectrum of the oil & gas industry. Continued growth in production & exploration of petroleum products has given birth to many data processing opportunities. Below are two selected examples. We have many more. Our client companies need your expertise now. Send us your resume or call.

#### COMPUTER SYSTEMS ANALYST

Major Oil and Gas Corporation has opportunity for a Systems Analyst in its Exploration and Production Division, with the following qualifications: Degree plus 3 years experience in Software Design and Implementation. Knowledge of FORTRAN and ASSEMBLY. Good analytical skills. Familiar with Real Time or Operating Systems. Knowledge of Salsic Data Recording and Processing Techniques a plus. Dallas based.

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A degree and five years experience applications programming on large IBM systems will qualify you for this career opportunity with the Dallas based division of a major oil and gas corporation. Become a contributing member of an exploration and production Data Processing team. Additional requirements are: Two years oil & gas experience, highly proficient in use of IBM 370 OS, FORTRAN, UTILITIES AND JCL, with basic knowledge of PL-1. General knowledge of Process or TSO. A willingness to travel and accept projects of short duration.

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Do you really know if you're in the one best position? Are others getting better exposure? Are you being paid what you're worth? Where will you fit in your present company's plans a year from now? What about in three years? Will you continue to grow or have you peaked out?

In today's dynamic computer field it's almost impossible to stay abreast of what others are doing and whether you are keeping pace. The Source Edp Computer Career Conference has been conceived to help computer professionals analyze and evaluate the current job market and find out where they stand. Key information systems executives from leading organizations in your area and across the nation will be available at the

Conference to explain their long-range plans—and where you might fit in. These firms represent a broad cross section of computer user, consulting and service organizations. They are diverse in industry, location, size and types of positions currently available. Each has something special to offer that might better utilize and broaden your skills and potential. Compensation levels are outstanding.

The Computer Career Conference is an easy way for you to investigate a wide variety of career paths rapidly while maintaining complete confidence. Over 15,000 specific positions currently exist with the Conference participants. A brief summary of these openings follows.

### Applications Programming

The widest choice of alternatives represented in the Conference is provided to those professionals who have one to two years or more of applications programming background. Conference participants will provide direct exposure and training in a variety of languages (COBOL, PL/1, BAL, RPG, BASIC, etc.), operating systems (OS/MVS, DOS/VS, VM, etc.), and data base and data communications (IMS, CICS, TOTAL, IDMS, ADABAS, System 2000, ENVIRON 1, etc.). In almost all cases, assignments will be projects or teams developing new and leading edge computer techniques. Significant opportunities exist for those with solid programming backgrounds to move into systems development, software, EDP auditing, or systems evaluation. In addition, professionals with exposure or interest in minicomputers will find a broad variety available at the Conference. All positions offer challenging job assignments providing the opportunity to accelerate career growth. Starting salaries range from \$18-\$37,000.

### Systems Development, Consulting and Project Management

A broad variety of openings exist within Conference organizations for persons with systems development background ranging from Junior Analyst to Senior Project Manager. While any industry exposure is acceptable, a background in manufacturing, finance, and/or distribution information systems will provide the broadest choice. College degrees are preferred, but not required. Ability to interface at all user levels and good oral and written communications skills are mandatory. A number of the Conference organizations offer current Applications Programmer Analysts the opportunity of moving directly into systems design projects. Those more senior are sought for Project Manager openings. Due to their ambitious MIS expansion plans, several organizations provide formal management training and development programs. State-of-the-art communications and data base oriented information systems are being planned by many of the participants. In addition, exceptional opportunities are available for those desiring to move into line management. Several small to intermediate firms are now making their first thrust into computerized systems implementation. In addition, nationally respected management consulting firms will be represented for those interested in a variety of assignments and high visibility. Starting salaries range from \$25-\$54,000.



## A special invitation to computer professionals with one to five years of experience.

If you are a computer professional with one to five years of experience, the Computer Career Conference offers you a most unique opportunity. Now is the most crucial period in your career. At this point in time, you have an almost unlimited number of career options from which to choose. Unfortunately, this also means you have more opportunities to make an error in selecting your one best career path. A wrong move now could close forever the option that would have yielded you the greatest long-term potential. By attending the Conference, you'll gain invaluable career planning knowledge in a matter of days that might otherwise take you years to learn.

### Systems Programming and Software Development

The challenges provided by Conference participants in software are both broad and unique. Those with at least one to two years of OS, DOS, DOS/VS, VS, or VM systems programming experience will be able to gain direct exposure to some or all of the following: OS, VS, MVS, JES3, CICS, IMS, TSO, DL/1, BTAM, TCAM, VTAM, OCR, duplex lines, modems, programmable line concentrators, switches, CRT's, IBM up to 370/168's, 4341-2's and 3033's, and a variety of non-IBM systems including minicomputers. Assignments range from development and modification to maintenance and support of advanced data base and data communications software. Many larger firms offer the combination of formal training and day-to-day association with some of the top technical professionals in the country, providing an ideal environment for professional development and exposure. Some smaller organizations provide an opportunity to join newly formed software support groups. Opportunities also exist for senior software men and women capable of supervising other professionals. A variety of positions are available in the design and/or development of a wide array of new systems software with both established computer manufacturers as well as ground floor opportunities with the new venture hardware companies. Several Conference participants offer software entry level positions for Applications Programmers strong in OS/BAL. Starting salaries range from \$24-\$52,000.

### Marketing and Marketing Support

Those professionals with a background or interest in computer marketing or marketing support will find significant opportunity at the Conference at both the individual contributor and management levels. Unique alternatives exist across a broad front including mainframes, minicomputers, terminal systems, time-sharing, facilities management, proprietary software packages, OEM's, consulting, etc. Those firms selected for the Conference have demonstrated a prior record of success and strong financial stability. Several are just now entering new markets providing exceptional growth potential. Compensation for those in direct marketing at quota ranges from \$30,000 to \$75,000. In support, salaries range from \$22-\$38,000.

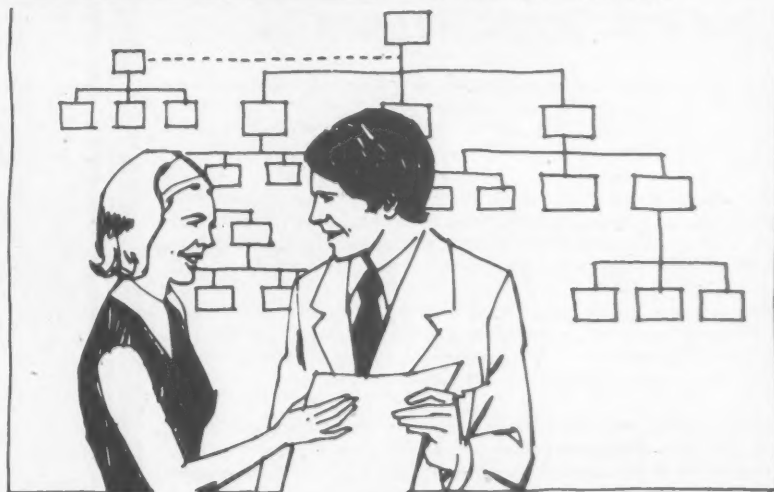
### Mini and Microcomputers

The mini and microcomputer market is exploding. There exist substantial demands for professionals having experience in applications programming, software development, systems programming, and management. A background in Assembly language, COBOL, Basic Plus, RPG II, FORTRAN or PASCAL in business applications, systems programming, or software development (real-time operating systems, compilers, communications, or data base) is preferred. Starting salaries range from \$23-\$45,000.

**The Computer Career Conference will be in a city near you soon. There is no charge for your enrollment or participation. Call today for complete details.**

Call Mike Parr today, tonight or this weekend at 1-800-821-7700 X822 (Missouri residents please call 1-800-892-7655 X822). Our special Career Conference toll-free lines are open twenty-four hours a day, seven days a week, including Saturdays and Sundays. As soon as we receive your inquiry, one of our professional staff will get back to you about Conference dates for your area, specific opportunities available, and how you may enroll in the Conference. There is no charge to you whatsoever to participate in the Conference—and your confidence will be rigidly protected. Don't miss this unique opportunity. Be sure to call today or this week. If unable to call, write:

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Source Edp Headquarters  
Two Northfield Plaza  
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Northfield, Illinois 60093**



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## International Institute of Tropical Agriculture Based in Ibadan, Nigeria seeks: **MANAGER, INFORMATION SYSTEMS**

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This position presents an exciting challenge for an experienced data processing professional who will be responsible, with support staff, for systems programming, analysis, and installation of both hardware and software, and for keeping the computer facility abreast of contemporary developments in management and agricultural research information systems. Along with other senior managerial and scientific staff, the individual selected will participate in the planning, development, and implementation of the Institute's management, research, and scientific information systems.

Successful candidates should have proven managerial ability and a thorough understanding of computer programming and systems analysis. A STRONG BACKGROUND IN MATHEMATICS AND STATISTICS IN A SCIENTIFIC DISCIPLINE IS ESSENTIAL, as well as the ability to communicate effectively with users in both administrative and scientific fields. A PhD is preferred, but not required. Familiarity with PDP-11 computers and RSTS/E Operating Systems is required.

The salary is attractive and the employment conditions are extremely competitive. Selected candidates will be invited to IITA in Nigeria, at the Institute's expense, for on-site interviews.

The preferred starting date is 1 January, 1982.

Nominations and applications, with resumes to be accompanied by salary history, should be submitted to: Mr. Harrington Hazel, Manager.

## Institute of International Education

809 United Nations Plaza, New York, NY 10017  
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In this position, you will be reviewing the design of all Data Base systems to be implemented on our Corporate Data Center equipment, consulting on the use of all aspects of Data Base technology in these centers, and evaluating and recommending optimum data organization and structures to achieve a balance between processing efficiency and storage requirements.

You will require a degree in Computer Science or another technical discipline along with experience with EDP systems development and the application of Data Base design and architecture. Knowledge of RAMIS or DMSII as well as Data Base technology, computers and their capabilities. Experience with consulting on Data Base or EDP is highly preferred.

In addition to our stimulating, professional environment, you'll be thoroughly impressed by our advanced and progressive management and personnel policies. Especially when it comes to salary and benefits. We offer a company-matching savings plan, a complete physical fitness center and full tuition reimbursement. And, we're certain you'll be favorably impressed with Omaha as well. It offers an affordable housing market and all the recreational and cultural advantages of a major, progressive city; without the problems.

Please send your resume, complete with salary history, in confidence to Mr. Jim LaHood, InterNorth, 2223 Dodge Street, Omaha, Nebraska 68102.

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Data Processing

# THE DP SURGE!

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A rush of new ideas, new state-of-the-art systems and trend-setting data processing applications reflects a surge of developments in the Data Processing Center at Home Federal Savings & Loan, a \$4.5 billion association and the nation's largest savings and loan consumer lender.

Our DP Professionals are adapting to meet the full financial service opportunities bestowed on the industry by states. Home Federal's Data Processing surge requires additional computer professionals who want the challenge and prestige of reshaping the future of financial DP Careers.

A "Future-Plex" career opportunity exists in one of these growth positions:

### Systems Analyst

You'll need at least 5-10 years data processing experience with IBM online systems and Cobol. A supervisory background with at least 2 years ATM background, along with organizational programming CICS-ATM 3600. As a group leader you will be required to support the current ATM system and to also develop the system test plan and execution. You will also contribute to the redesign of the ATM system as needed.

### Hardware-Configuration Analyst

You will be required to prepare machine room layouts, hardware inventory lists, and formulate guidelines for constructing RFP's. You'll also assist in the capacity planning process by making available information on hardware performance capabilities and loading capacities. A background in hardware evaluation, performance and procurement procedures in a data processing environment. You must also possess good written and verbal skills along with evaluation and analytical skills. Prefer a BS/BA in science, liberal arts or computer science.

### Performance Evaluation

You will be responsible for performing workload characterizations and forecasting, bottleneck analysis of computer performance, and monitoring of service levels. Will assist in analytical modeling of computer processing and contribute to capacity planning efforts. Expertise in High Level languages, exposure to MVS internals and DP operations. Expertise with any combination of the following: Cobol, ALC, OS/JCL, FORTRAN, SAS or APL plus some experience with Systems programming, RMF/SMF, data handling and computer modeling. BS in science or math.

### DASD Management Analyst

You will be expected to oversee control of DASD space allocation and file placement, perform monitoring function of DASD utilizations and contribute to overall DASD efficiency improvement efforts. Will be involved in determining reserve capacity levels of the entire DASD sub-configuration and tracking of DASD performance. We're looking for 2-3 years programming, data base file management and/or data base administration. Your programming skills should include Cobol, and/or ALC, OS/JCL, utilities, or DASD. Some college background preferred, a BS/BA is a definite plus.

### Systems Programmers 2 Positions

You will provide basic CICS systems support for the corporate DP Center. You should also have CICS generation and maintenance experience. Medium-large IBM shop in a complex environment. Be able to use Performance Analyzer, Cobol or ASM languages. Knowledge of communication products a plus along with CICS internals.

You will generate, implement, maintain and tune IBM communication software. Experience will require communication systems support along with ACF/VTAM-ACF/NCP level measurement. Exposure to medium to large scale IBM systems a definite plus.

Home Federal gives top computer professionals a preemptive salary and well-ordered company-paid benefits package that includes family medical, dental, life and eye care plans, for starters. We invite you to send your resume and salary history in confidence to:

Mr. Cesar Namba

701 Broadway, 6th Floor  
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San Diego, California 92101

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## DOS, DOS/VS, DOS/VSE, EDOS Systems Programmers . . .



## A Good Fit is Worth Looking For.

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If you're an IBM DOS, DOS/VS, DOS/VSE, or EDOS operating systems professional, your search is over. Nixdorf Computer Software Company, Richmond, VA, is the company tailor-made for your talents and ambitions.

### NCSC: Small company informality. Big company resources.

As a wholly-owned subsidiary of Nixdorf Computer Corporation, Waltham, MA, NCSC offers the perfect environment for your personal and professional growth. You'll work with other talented professionals in small project teams at the leading edge of operating systems development technology. Our atmosphere encourages and rewards creativity and innovation. And it's all backed by Nixdorf Computer's international reputation.

### Our simple philosophy: Challenged and happy people produce the best work.

At NCSC, we're firmly committed to state-of-the-art technological excellence—placing us on the Datapro software honor roll for 3 consecutive years. So your talent will be challenged and stimulated to grow and mature. Our creative

environment, professional attitude, and friendly atmosphere blend to provide a truly enriching career experience.

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They're outstanding. Health, major medical, life, dental, prescription drugs, short-term and long-term disability, vacations and holidays, savings and investment plan, direct pay deposit, 100% tuition reimbursement, in-house training and education programs, and more. Sounds great? You're right.

### Nationwide Locations.

NCSC has regional offices in some of the most desirable cities in the U.S. Several opportunities are available in Dallas and Chicago, with the majority of positions open at NCS headquarters in Richmond, Virginia.

### In Richmond, the emphasis is outdoors.

Golf in January. Enjoy your favorite outdoor activities 9 to 10 months a year. Sensibly-priced homes on family-sized building sites. You'll like living in Virginia's state capital, with its cosmopolitan, professional ambience, 600,000 metro population, within 2 hours from Washington, D.C., the Blue Ridge Mountains, or the seashore. And your very competitive NCSC salary goes a lot farther with Richmond's low cost of living.

### Our Current Opportunities:

For all these positions, you should have at least 2 years IBM DOS, DOS/VS, DOS/VSE or EDOS operating system experience and be proficient in Assembly language programming, Teleprocessing, networking, RJE, VSAM, BTAM, VTAM and CICS would be valuable.

**Operating Systems Programmer.** Design and develop from ground floor a complete software system, including operating systems and communications software.

**Software Support Representative.** Provide customer support for Nixdorf operating system software. Customer contact and troubleshooting experience essential.

**Systems Programmer.** Provide program fixes, implement enhancements, and assist customer support efforts.

**Support Systems Programmer.** Perform systems generation, maintenance, and other software support functions for in-house development, support and production.

**Technical Instructor.** Conduct in-house and customer education for our operating system products; travel involved. Instruction proficiency essential.

**Technical Writer.** Provide internal documentation development programs. We seek a professional whose talents combine systems programming experience with strong technical writing skills.

If you're interested and feel you're the right fit for one of our opportunities, please forward your resume, stating your area of interest and including your salary history, to Mike Williams, Employment Manager, Nixdorf Computer Software Company, 6517 Everglades Dr., Richmond, VA 23225. Or call — outside of Virginia — TOLL FREE 800-446-9900. In Virginia, 804-276-9200. We are an equal opportunity employer m/f/h.

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As a result of the merger of Dart Industries Inc. and Kraft, Inc., a new Dart & Kraft Corporate Headquarters has been established in suburban Northbrook. A Fortune 30 company and one of the largest diversified food and consumer products companies in the world, our reputation is unequaled, based on such highly regarded brand names as Kraft, Tupperware, Duracell, West Bend and KitchenAid, to name a few.

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Assignments in the Technical Support Group will involve installation, generation, maintenance and modification of major system control software. These positions will also include application and user support functions.

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We offer salaries commensurate with work experience and job responsibilities; a progressive, professional work environment and an outstanding benefits program with premiums too numerous to mention, including employee cafeteria, physical fitness center and tuition refund, to mention a few.

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Employment Manager

Dart & Kraft, Inc.  
2211 Sanders Road, Northbrook, IL 60062

or call Joan Richter at (312) 496-8088  
For further information

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Data Processing

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This position is responsible for the detail computer design of application software. Functions include 1) detail systems analysis, design and implement systems specification and documentation 2) project management 3) implementation testing and 4) system education. Additional duties include assuring high standardization of proprietary software and preparing system test plans. Requirements include working knowledge of structural design and programming, DOS or OS IMS DL/1 and how they effect design concepts, and data base design.

## SYSTEMS SOFTWARE PROGRAMMERS

Our rapidly expanding data center has created openings for system software programmers. We support a number of data base management packages on our 3033 PCM, and run OS, DOS and VM. We can offer you a challenge while exposing you to a software environment which will enhance your career potential. Requirements include 5 years of data processing experience with a background in IBM DOS or OS.

Our multi-faceted applications environment encourages professional growth. The efforts of our people are our product! You'll find we support initiative and are quick to respond to contribution. We're offering attractive salaries and comprehensive benefits. If your capabilities have outgrown the career potential of your present position, contact us.

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—with strong experience in ASSEMBLER, FORTRAN or COBOL (minimum two languages) on D.G., H.P., DEC or Mini's.  
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We offer an outstanding compensation package, including periodic performance-based cash bonuses, tuition refund, and numerous company-paid benefits. Openings exist in our New York City, Boston, and Chicago offices.

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Ms. Lorraine Visovsky  
Director of Personnel  
The Monchik-Weber Corporation  
111 John Street  
New York, NY 10038

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**Alan-Mitchel Assoc., Inc.**  
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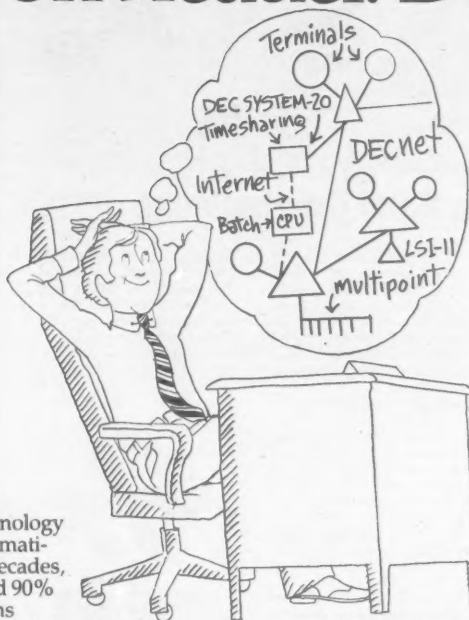
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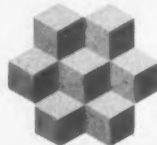
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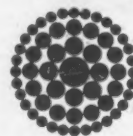
The individuals we choose will participate in the development and maintenance of business oriented computer systems and programs. Candidates must be knowledgeable in ANS COBOL, be degreed, and communicate well. CICS and a varied application background including customer accounting is beneficial. OS is preferred.

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We are seeking a seasoned computer professional with excellent communications skills to supervise the documentation, maintenance, enhancements and project scheduling system for our engineering and construction areas. As a liaison to company departments the individual selected will coordinate practices and policies to assure conformity, and will monitor results and responsiveness to user needs. Knowledge of COBOL or FORTRAN in any hardware environment, and a degree are required.

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An exciting and challenging opportunity is offered in an attractive environment with equitable salaries. Responsibilities will include participating in the commissioning of the school and teaching in the Bachelor degree programmes. The language of instruction is English.

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Salaries are highly competitive. Benefits include free furnished accommodations or an accommodation allowance, local transportation allowance, educational assistance for up to four children, a paid 60 day holiday, round trip to place of origin once a year to include family and an end-of-leave bonus.

Applications will be held in strictest confidence and all will be acknowledged. Interviews will be held in the USA, Canada and the U.K. towards the end of 1981. Please send three copies of a complete curriculum vitae with name, address and telephone numbers of 3 referees to:

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## NEW DATA PROCESSING CAREER OPPORTUNITIES IN THE BOOMING SOUTHWEST AND MOUNTAIN STATES

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<p><b>TEAM LEADER..... 28-30K</b> Expanding manufacturing firm seeks technically sharp programmer to lead new on-line development project. Sound opportunity for rapid advancement with formal technical and management training. CICS is definite plus. Background in IBM, OS, COBOL and PL/I preferred.</p> <p><b>PROGRAMMER/ANALYST..... low 30's</b> One of the finest companies in Dallas seeks programmer/analyst with 3 plus years IBM COBOL with experience in either Inventory, Personnel, Accounts Payable/Receivable or General Ledger. The ideal candidate will have good oral and written communication skills and a desire to advance to leadership roles. Exceptional benefits including dental and free parking.</p> <p><b>MANAGEMENT SCIENCE ANAL... high 20's</b> Corporate advisory staff of Dallas energy firm desires professional with linear programming background to provide consulting and operations research services. Suburban location, highly visible position.</p> <p><b>MANAGER OF SOFTWARE..... low 40's</b> Leading Dallas distribution firm requires a manager to assume responsibility for all telecommunications and database software. IBM DB/DC experience preferred. IBM 303X MVS environment. Direct staff of five.</p> <p><b>NEW INSTALLATION..... 20-40K</b> NYSE firm establishing new Dallas installation offers positions from Programmer/Analyst to Project Manager with critical needs for Systems Analyst with supervisory exposure. Oil and Gas industry and large scale IBM systems exposure preferred. Excellent relocation benefits including home purchase.</p> <p><b>SYSTEMS ANALYST..... to 36K</b> High technology manufacturing company requires a creative thinker with a proven track record in application development in a large installation. Company currently upgrading to IBM 303X and is committed to a database technology.</p>	<p><b>SYSTEMS MANAGER..... to 40K</b> International financial services firm headquartered in Denver offers the exceptional challenge to an experienced professional. Manage a development group of 15 people in the implementation of leading edge applications. On-line, database systems background required.</p> <p><b>MVS SYSTEMS PROGRAMMERS . high 30's</b> Over thirty openings throughout the Rocky Mountain area for software specialists with specialized expertise in MVS, CICS, IMS, ACF, ACP, VM or NCP. Excellent educational opportunities and technical career paths.</p> <p><b>PROGRAMMER ANALYST..... 16-28K</b> Prestigious Denver based oil and gas exploration and production firm seeks qualified COBOL experts for its new IBM 4341 MVS installation. Extensive on-line development, CICS and data base training provided.</p> <p><b>TELEPROCESSING ANALYST..... to 27K</b> Nationally known software firm offers opportunity to consult with wide variety of clients with sophisticated communications requirements. Strong hardware and large scale systems software background required.</p> <p><b>IMS ANALYSTS..... 21-38K</b> Leading Denver firm desires professionals with a minimum of one year IMS data base design and support. Responsibilities include providing technical support to the programming staff and end users.</p> <p><b>DATA PROCESSING MANAGER..... to 35K</b> Coordinate the initial implementation of computer usage for a growth oriented services firm. Truly a ground floor opportunity. Requires small to medium scale hardware/software background with proven leadership skills.</p> <p><b>PROGRAMMERS..... 15-25K</b> Develop expertise in structured techniques and gain exposure to a detailed systems design. 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Requirements seek for Programmer/Analyst, DBA's, Software Specialist and Project Leaders.</p> <p><b>TECHNICAL SUPPORT..... to 32K</b> Serve as in-house experts in communications and operating systems support for the regional financial institution. Background in CICS, NCP, VTAM, BAL and OS desired. Exceptional merit review program and outside training.</p> <p><b>APPLICATION PROGRAMMERS..... 15-26K</b> Participate in the full development cycle of major distribution and financial systems software. Work in group of 4-5 professionals with highly rewarding assignment. Minimum one year COBOL, ALC or PL/I with preference for exposure to both OS and DOS.</p> <p><b>ENGINEERING PROGRAMMERS..... to 27K</b> High technology Arizona based firm offers challenging position utilizing microcomputers, FORTRAN and graphics development. Requires light travel and extensive interface to engineering and technical personnel.</p> <p><b>JR. CONSULTANT..... 18-24K</b> National consulting firm desires computer programmers or analysts who wish to broaden their data processing experience and assist client organizations in the development and implementation of long range information management plans. Prefer backgrounds with multiple language expertise, microcomputers, operations research, or Business Management.</p>
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- PROG 2 YR COBOL \$28K
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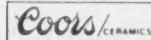
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If you have a degree and 3 or more years of experience, grab hold of this opportunity—don't delay—send your resume to: Professional Placement, E-Systems, Inc., Garland Division, P.O. Box 226118, Dept. ES41, Dallas, Texas 75266.



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Plan and direct the delivery of computing services to faculty and students for instructional and research purposes. Evaluate and provide for the installation of new applications and innovative computing facilities to assure a high level of academic support. Participate in budgetary planning, establishment of long-term objectives and evaluation of vendor proposals for the Center. Requires Masters Degree in Math/Statistics or equivalent, minimum of 3-5 year's experience in academic computing support administration and well developed communication, interpersonal and supervisory skills.

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Plan and direct the operation of the technical services function. Provide technical expertise in developing and maintaining operating system software and in evaluating new hardware/software facilities. Provide consulting to Center's staff on technical matters. Participate in budget planning and establishing Center's objectives. Requires Bachelors Degree and minimum of 3 year's experience in computer operations/systems programming management in IBM OS environment.

### SYSTEMS PROGRAMMER

Participate in the development and maintenance of operating systems software including the identification and resolution of system problems and planning for future system enhancements. Assist faculty and students in solving software problems and maintain Computer Center cost accounting and reporting systems. Requires minimum of 1-3 year's experience in OS/V/S systems programming and related functions.

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### SYSTEMS PROGRAMMERS

Boulder, Colorado Openings

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Will work in newly created Information Center to assist end users in their access to computer data. Duties will include consulting with users to identify, define, code and process high level user-written programs and queries.

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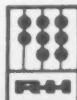
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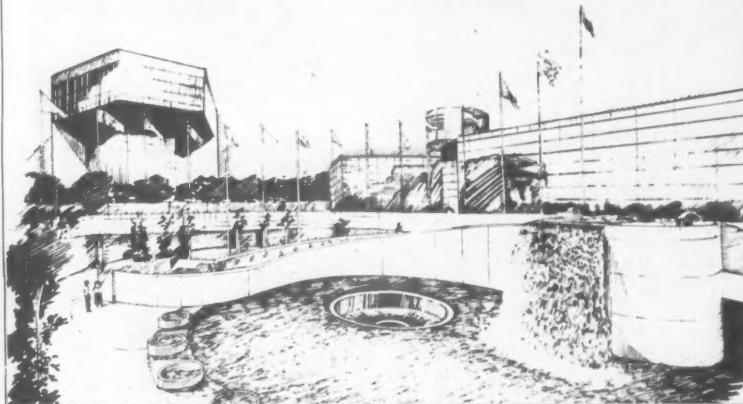
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DP Mgr (5 yrs IBM 370 or SYS 34)	30-35K
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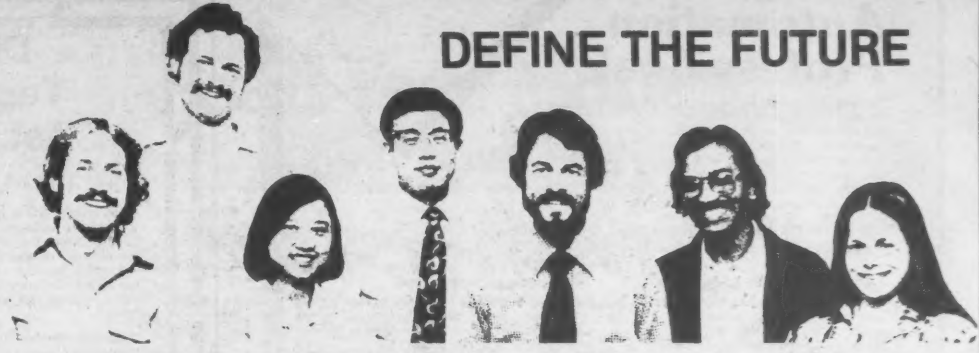
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## Positions For Software Engineers Are Available In The Following Disciplines:

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Your responsibilities will include data base design, implementation, and programming for a state-of-the-art design automation system. This involves using a CODASYL data base management system on IBM MVS and and/or VM operating systems. Requires at least 3 years' experience in data base design and implementation using CODASYL data base management systems, and 3-plus years' programming experience using CODASYL data bases. Design automation experience is desirable; IBM mainframe experience a plus.

### Database

Your responsibilities will include data base implementation and programming for a state-of-the-art design automation system. Involves using a CODASYL data base management system on IBM MVS and/or VM operating systems. Requires at least 3 years of experience in programming for a CODASYL data base environment. Design automation experience is required; IBM mainframe experience is desirable.

### Process Simulation

Your primary responsibility will be the support of SUPREM, SEDAN, GEMINI and similar process simulation software. You must be capable of understanding and modifying bi-polar process models. Requires 2-plus years' experience supporting process simulation software; additional design automation and/or IBM mainframe experience is desired.

### Circuit Simulation

Your primary responsibility will be the support of SPICE2 or similar circuit simulation software. You must be capable of understanding and modifying bi-polar circuit models. Requires 2-plus years' experience supporting circuit simulation software; additional design automation and/or IBM mainframe experience is desired.

### Systems Support

You will assist users in designing and implementing interfaces to system services, assist in training new users, and participate in planning a large computer center. Ability to generate and maintain VM/370, OS/VS1, and MVS systems, and familiarity with higher level languages including FORTRAN, COBOL, and PL1 are required.

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Your background must include having written a significant DA application program (preferably a function, timing, logic or circuit simulation program) and supporting that program for a large user community. Familiarity with component design of a large computer at the architectural level, or with commonly used computer logic functions, is necessary. Knowledge of a hardware design language such as AHPL, and experience with VM/CMS and MVS desired.

### Logic Simulation

Your primary responsibility will be to implement and support a logic simulator. Requires 2-plus years' experience in design automation; experience which includes support of TEGAS, LOGCAP, or a similar program. IBM mainframe experience is also desired. Experience in functional or mixed-mode simulation is a plus.

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Your responsibilities will include analysis design and programming for a graphics entry/editor system as a part of a state-of-the-art design automation system. Involves using IBM MVS and/or VM operating systems. Requires at least 2 years' experience in graphics system design programming with programming experience in design automation graphics preferred. Experience with data base programming, especially CODASYL, and IBM mainframe experience are desired.

Both technically and financially, you will directly benefit from your contributions. Please forward a confidential letter/resume to Brian Duff at Trilogy Systems Corporation, 5150 Great America Parkway, Santa Clara, CA 95050, or CALL COLLECT (408) 727-1045. An affirmative action, equal opportunity employer m/f/h.

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Computing Center  
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(505)277-2211

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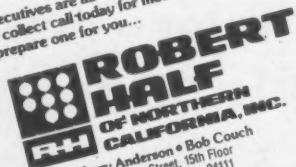


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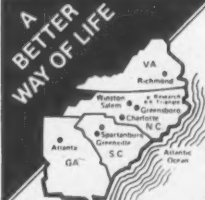
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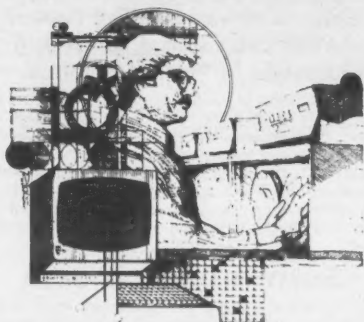
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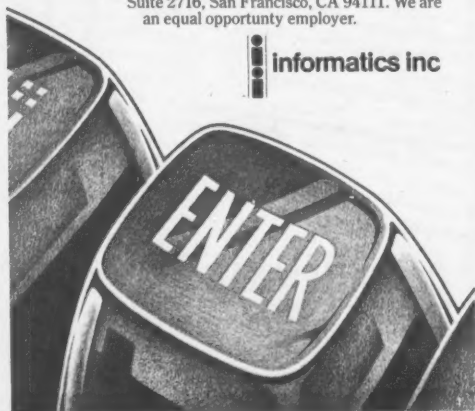
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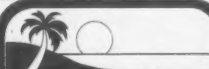
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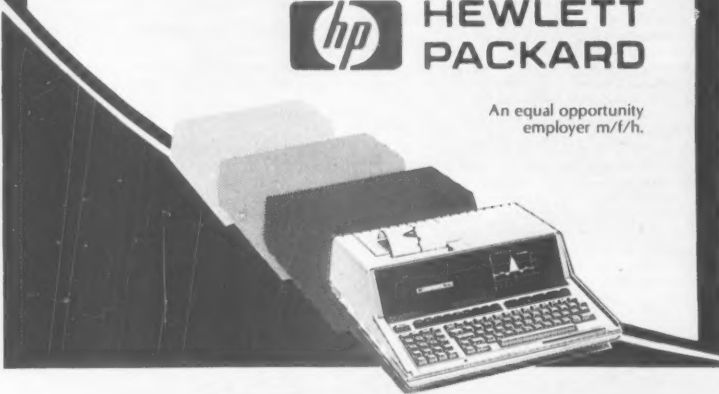
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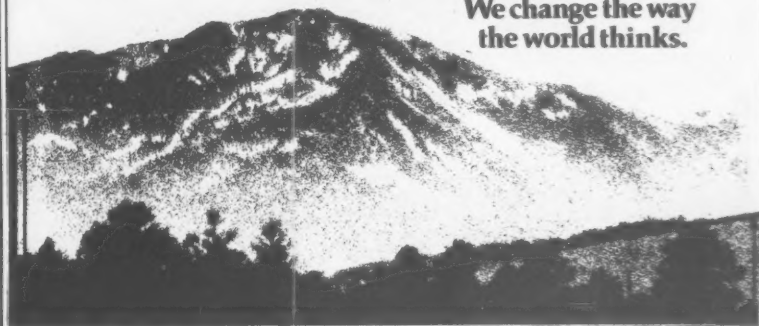
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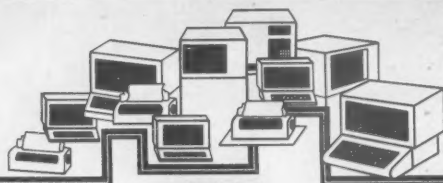
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
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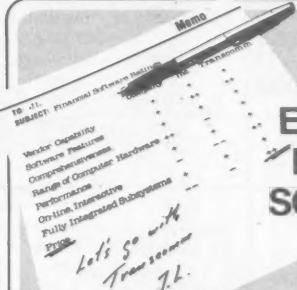
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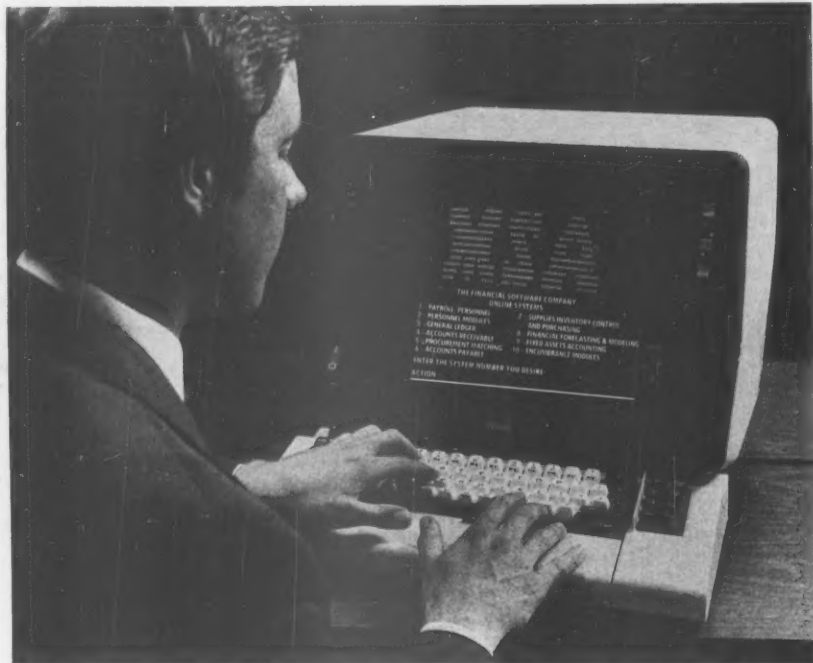
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